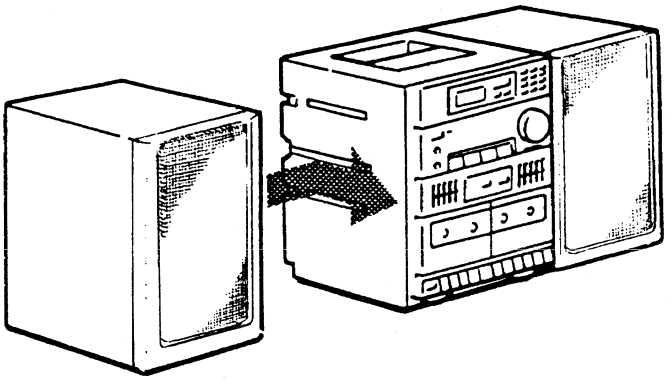
FH-414 II

SERVICE MANUAL

Canadian Model
AEP Model
E Model



- FH-414 II is composed of following models. As for the service manual it is issued for each component model, then, please refer to it.

COMPONENT MODEL NAME FOR FH-414 II

TUNER, DECK, AMPLIFIER	HST-414 II
SPEAKER SYSTEM	SS-H414 II

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

SPECIFICATIONS

Power requirements	Canadian model : 120 V AC, 60 Hz E model : 110-120 V or 220-240 V AC adjustable, 50/60 Hz
Power consumption	Canadian model : 85 watts AEP, E model : 65 watts
Dimensions	Approx. 595×270×250 mm (w/h/d) (23 1/2×10 3/4×10 inches) incl. projecting parts and controls
Weight	Approx. 9.5 kg (20 lb 15 oz) net

Design and specifications subject to change without notice.

PARTS LIST

ACCESSORY & PACKING MATERIAL

Part No.	Description
*X-4919-684-1	(E)···HANDLE ASSY
1-501-349-51	ANTENNA, LOOP (AM)
3-751-616-11	(Canadian, AEP, E, Australian) ···MANUAL, INSTRUCTION
3-751-616-41	(AEP)···MANUAL, INSTRUCTION
3-751-616-51	(West Germany, Italian) ···MANUAL, INSTRUCTION
3-751-616-61	(East European) ···MANUAL, INSTRUCTION
*4-934-413-01	(E)···INDIVIDUAL CARTON
*4-934-415-01	(EXCEPT FOR E) ···INDIVIDUAL CARTON
*4-931-112-01	CUSHION (HST-414 II)
*4-857-137-01	CUSHION (SS-H 414 II)
*4-910-128-01	SHEET, PROTECTION (HST-414 II)
*4-920-151-01	SHEET, PROTECTION (SS-H 414 II)

COMPACT HI-DENSITY COMPONENT SYSTEM

SONY®

MICROFILM

9-955-717-11

Sony Corporation
Audio Group

English
90B0453-1
Printed in Japan
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Published by Customer Relations and Service Group

HST-414 II

SERVICE MANUAL

Canadian Model
AEP Model
E Model

This set is almost the the same as model HST-414 (Canadian, AEP model) / HST-414L (E, Sandi Arabia model) previously produced.
Therefore, see the service manual for the informaton which is not contained in this service manual.

• PART LIST (The difference between HST-414/414L and HST-414 II)

HST-414/414L			HST-414 II	
Page	No.	Part No.	Part No.	Description
	6	X-4915-469-1 X-4915-472-1 X-4915-473-1	X-4915-499-1 X-4918-001-1	(E, Saudi Arabia)···PANEL ASSY (Canadian, AEP, West Germany, Italian, East Europian) ···PANEL ASSY
18	T901	1-449-544-11	1-449-620-11	(E, Saudi Arabia)···TRANSFORMER, POWER
	903	*A-4333-259-A	*A-4334-421-A	(East European)···MOUNTED PCB, MAIN
	904	*A-4333-266-A	*A-4334-422-A	(East European)···MOUNTED PCB, CONTROL
23	FE001	1-465-232-11	1-465-396-11	(East European)···FRONT END (FM)
	IC201	8-759-234-33	8-759-239-43	(East European)···IC TC 9306F-051

• Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

COMPACT HI-DENSITY COMPONENT SYSTEM

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HST-414/414L

SERVICE MANUAL

AEP Model
HST-414
Saudi Arabia Model
HST-414L

This set is the tuner, deck and amplifer section in FH-414, 414L.

Model Name Using Similar Mechanism	HST-404
Tape Transport Mechanism Type	DECK A: TCM-YM47CW-70 DECK B: TCM-YM47CW-71

SPECIFICATIONS

Tuner Section

System: FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	87.5 – 108 MHz
Antenna	Telescopic antenna
Antenna terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz

MW/LW tuner section (for HST-414)

	MW	LW
Tuning range	531 – 1602 kHz (except Italian model) 522 – 1611 kHz (for the Italian model)	153 – 281 kHz (except Italian model) 144 – 288 kHz (for the Italian model)
Antenna	AM loop antenna External antenna terminals	

LW/MW/SW tuner section (for HST-414L)

	LW	MW	SW
Tuning range	153 – 281 kHz	531 – 1,602 kHz	5.95 – 17.9 MHz
Antenna	AM loop antenna External antenna terminals		

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

Amplifier Section

Continuous RMS power output: 20 + 20 watts (6 ohms, at 1 kHz, 5% THD)
Peak music power output: 200 watts (6 ohms)

Inputs

	Sensitivity	Impedance
CD (phono jacks)	450 mV	50 kilohms
MIC (minijack)	1 mV	600 ohms
PHONO (phono jacks)	5mV	47 kilohms

Outputs

HEADPHONES (stereo minijack)	Accepts headphones of 8 ohms or more.
SPEAKER	Accepts speakers of 6 to 16 ohms.

Cassette Deck Section

Recording system: 4-track 2-channel stereo
Frequency response (DOLBY NR OFF)
60 – 13,000 Hz (± 3 dB), using TYPE I cassette (Sony HF-S)
60 – 14,000 Hz (±3dB), using TYPE II cassette
Wow and flutter: 0.1% WRMS
± 0.3 % (DIN)

MICROFILM

COMPACT HI-DENSITY COMPONENT SYSTEM

SONY®

Overview

Tuner section

- Consult the below chart for the band stations receivable for the model available in your country.

HST-414	LW/MW/FM
HST-414L	LW/MW/SW/FM

- You can store up to 25 stations in the memory.

Amplifier section

- DBFB (Dynamic Bass Feedback) system of the Canadian, European and U.K. models, or SAT (Super Acoustic Turbo) system of the model for other countries reinforces bass sound.
- 5-band stereo graphic equalizer adjusts the sound quality to your preference during playback.

Cassette deck section

- Double decks allow you to :
  — dub tapes.
  — play back one deck then the other successively.

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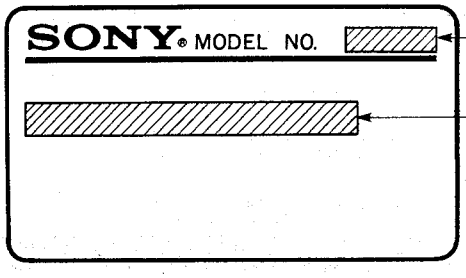
MODEL IDENTIFICATION

—Specification Label—



HST-414
HST-414L

HST-414

HST-414L

AEP MODEL	AC: 220~50/60Hz
WG MODEL	AC: 220~50Hz
IT MODEL	AC: 220~50Hz
	AC: 110~120/220~240~50/60Hz 65W

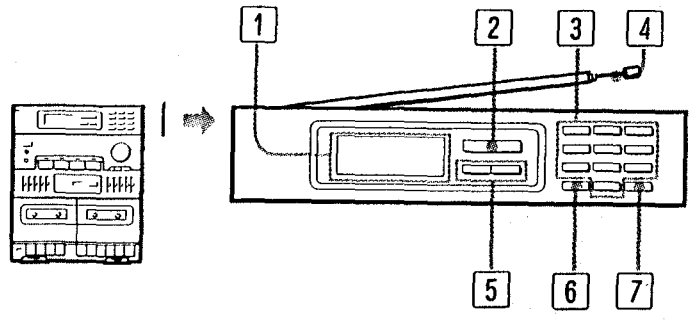
(WG : West Germany model
IT : Italian model)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

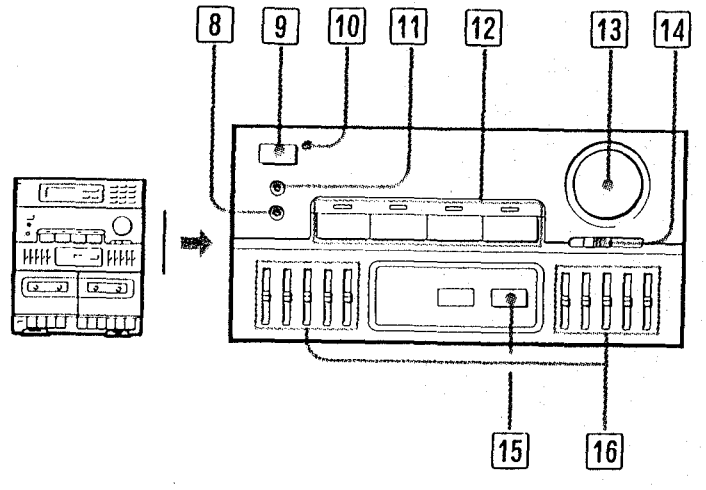
SECTION 1
GENERAL

1-1. PARTS IDENTIFICATION



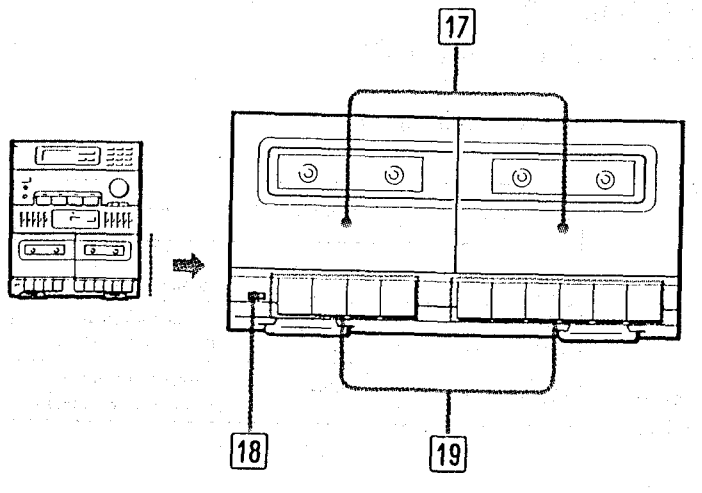
Tuner Section

[1] Display window
[2] BAND selector
[3] PRESET STATION buttons
[4] Telescopic antenna
[5] TUNING +/– buttons
[6] MEMORY button
[7] ENTER button



Amplifier Section

[8] HEADPHONES jack (stereo minijack)
[9] POWER switch
[10] STANDBY indicator
It is lit as long as the AC power cord is connected to a wall outlet.
[11] MIX MIC (microphone) jack (minijack)
[12] Function selectors
[13] VOLUME control
[14] BALANCE control
[15] DBFB (Dynamic Bass Feedback) button (for the Canadian, European and U.K. model)
SAT (Super Acoustic Turbo) button (for the model for other countries)
[16] 5-band stereo graphic equalizer



Cassette Deck Section

[17] Cassette holder
[18] DOLBY NR switch
[19] Tape operation buttons
▶: PLAY (playback) button
◀◀: REW (rewind) button
▶▶: FF (fast forward) button
■⏏: STOP/EJECT button
●: REC (record) button and indicator
❚❚: PAUSE button

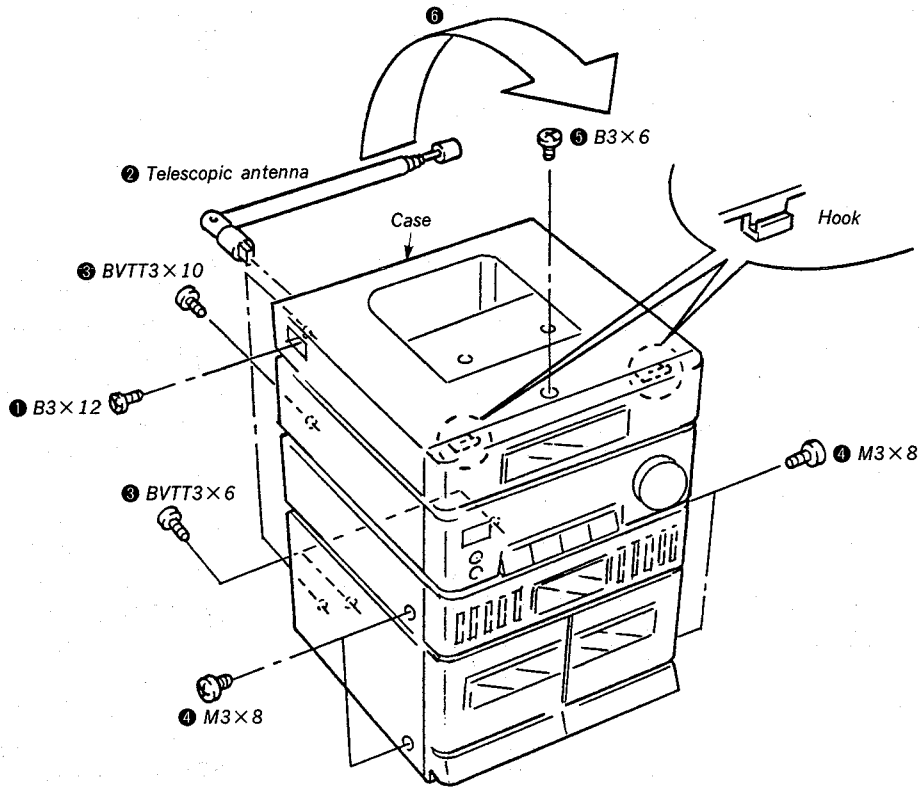
SECTION 2
DISSASEMBLY

Note: Follow the disassembly procedure in the numerical order given.

2-1. Case Removal

1. Remove the ❶ screw +B 3×12, next similar way the ❷ antenna, telescopic.
2. Remove the seven screws. (❸ to ❺)
3. Pull the rear side of case, unlocked the two hooks.

Coution: Be careful not to break off the hooks.



SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback heads — pinch rollers
   erase heads — rubber belts
   capstan — idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

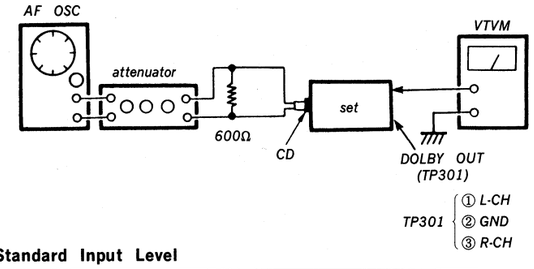
Torque	Torquement	Meter reading
FWD	CQ-102C	30−70g•cm (0.42−0.97oz•inch)
FWD Back tension	CQ-102C	1.5−5.5g•cm (0.020−0.076oz•inch)
FF, REW	CQ-201B	63g•cm or more (0.87oz•inch or more)

SECTION 4
ELECTRICAL ADJUSTMENTS

1. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.
  DOLBY NR switch: OFF
  GEQ RV: CENTER
  ISS switch: 1
  FUNCTION: CD
- Standard Record:
  Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Mode: record



Standard Input Level

	AUX/CD
source impedance	600Ω
input level	0.46V (−4.6dB)

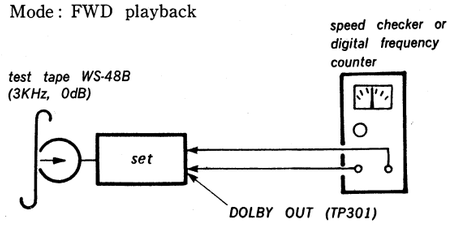
Standard Output Level

	DOLBY OUT
load impedance	—
output level	0.4V (−5.7dB)

Tape Speed Check

Procedure:

Mode: FWD playback



Specification:

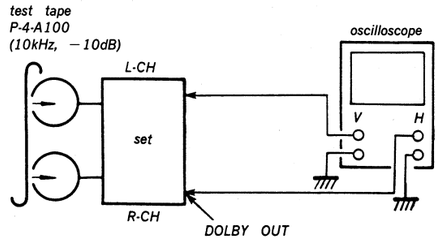
Digital frequency counter
2,920Hz−3,070Hz

Record/Playback Head Azimuth Adjustment

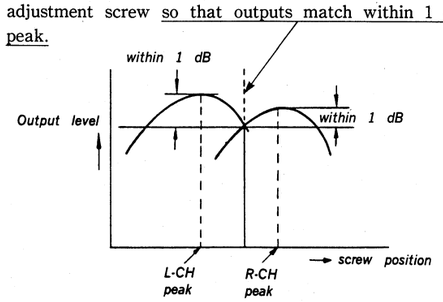
Note: Perform this adjustments for both decks.

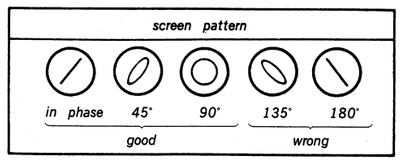
Procedure:

1. Mode: FWD playback



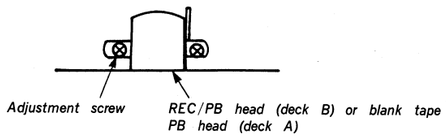
2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.





3. After the adjustments, apply suitable locking compound to the parts adjusted.

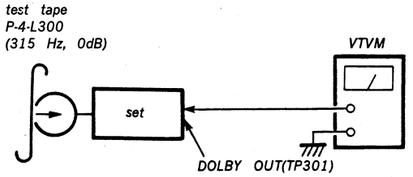
Adjustment Location:



Playback Level Adjustment

Procedure:

Mode: FWD playback



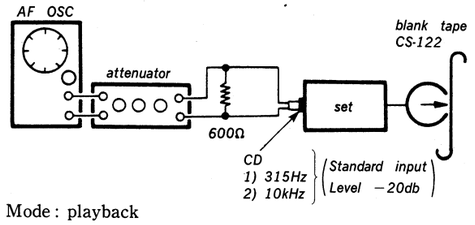
Adjust,
DECK-A side RV321 (L-CH), RV421 (R-CH)
DECK-B side RV331 (L-CH), RV431 (R-CH)
so that the specifications are satisfied.

LINE OUT level: 0.38 to 0.42V
(−6.2 to −5.2dB)
level difference between the channels: within 1.0dB

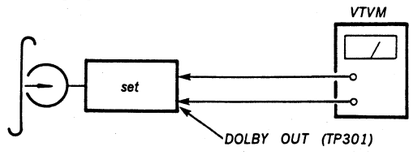
Record Level Adjustment

Procedure:

1. Mode: record



2. Mode: playback



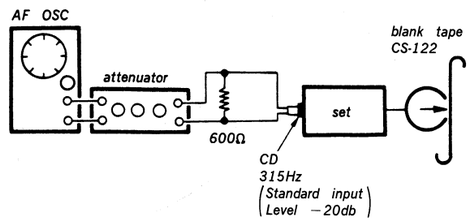
Play back the recorded in step 1. If the specification is not satisfied, adjust RV341 (L-CH), RV441 (R-CH) and repeat steps 1 and 2.

DOLBY OUT level: 0.45 to 0.36V (−4.7 to −6.7dB)

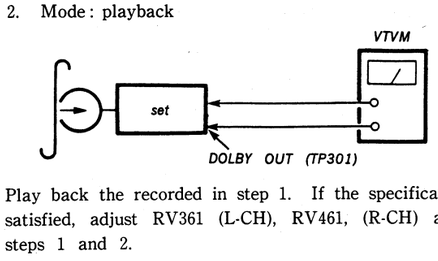
Record BIAS Current Adjustment

Procedure:

1. Mode: record



2. Mode: playback



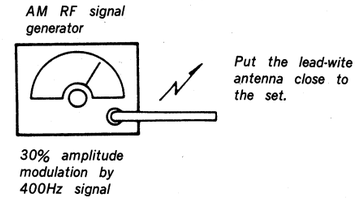
Play back the recorded in step 1. If the specification is not satisfied, adjust RV361 (L-CH), RV461, (R-CH) and repeat steps 1 and 2.

The DOLBY OUT level of 10 kHz signal relative to that of 315 Hz: −1 to 1dB

AM SECTION

Setting:

BAND selector switch: SW or MW (AM), LW



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capactitors.

HST-414L

SW3 OSC Voltage Adjustment

Procedure:

1. Connect the VOM to FL001⑭pin (VT).
2. Set the BAND selector switch to SW.
3. Push the TUNING (+, −) button for 5.95MHz Adjust L003 for 0.9 to 1.1V reading on the VOM.
4. Push the button for 17.9MHz. Adjust CT003 for 8.7 to 9.3V reading on the VOM.

HST-414L

SW3 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
17MHz	7MHz
CT004	L004

MW (AM) Tuned Indication Lighting Level Adjustment

BAND select switch: MW (AM)

1. Output 0.45mV (53dB), 1,404kHz from AM RF signal generator.
2. Adjust RV102 so that the LCD TUNED light up.

LW OSC Voltage Adjustment

Procedure :

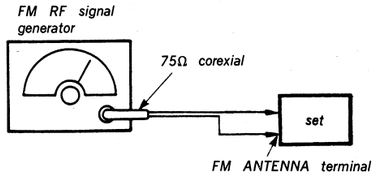
1. Connect the VOM to D002-2 cathode (VT).
2. Set the BAND selector switch to LW.
3. Push the TUNING (+, −) button for 153kHz (IT : 144kHz) Adjust L001 for 0.9 to 1.1V reading on the VOM.
4. Push the button for 281kHz (IT : 288kHz). Adjust CT001 for 8.7 to 9.3V reading on the VOM.

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
270kHz	162kHz
CT005	L010

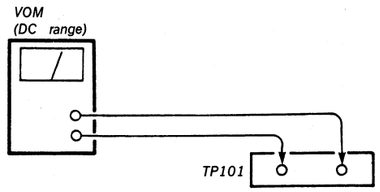
FM SECTION

FM Discriminator Alignment (NULL Check)

Setting:



Carrier frequency : 98MHz
Modulation :
(AEP, Saudi Arobia) : 1kHz, 75kHz deviation
(WG, IT) : 1kHz, 40kHz deviation
Output level : 1mV (60 dB)



Procedure :

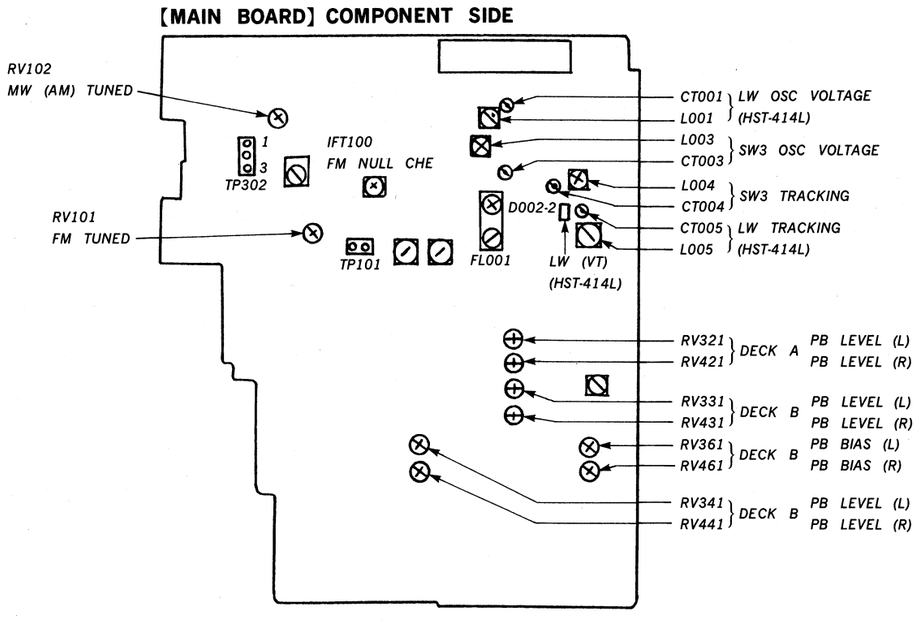
1. Push the TUNING (+, −) button for 98 MHz.
2. Adjust IFT101 for 0V reading on the VOM.

Note : FM tuned indication lighting level adjustment should be made after FM discriminator alignment.

FM Tuned Indication Lighting Level Adjustment

BAND select switch : FM

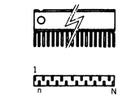
1. Output 40μV (32dB), 98MHz from FM RF signal generator.
2. Adjust RV101 so that the LCD TUNED light up.



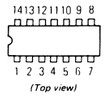
SECTION 5
DIAGRAMS

5-1. SEMICONDUCTOR LEAD LAYOUTS

BA3406AL



M4001BP



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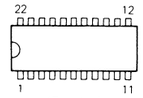
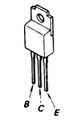
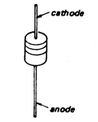


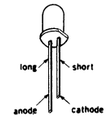
2SB1187-F
2SD1761-E



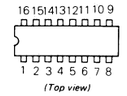
HZS7B2L
1SS168



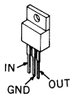
SEL1210W



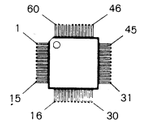
CXA1101P
M5226P
TC4052BP



M5F7805

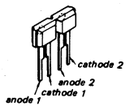


TC9306F-040

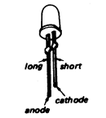


2SD1387

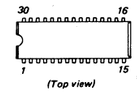
KV1236D



SEL1910W



LA1851N
M50725-116SP

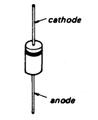


M5218L
M5230L-A

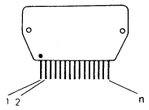
DTA114ES
DTC114ES
DTC143TS
2SC2458-Y
2SC2724-C

2SK246GR3

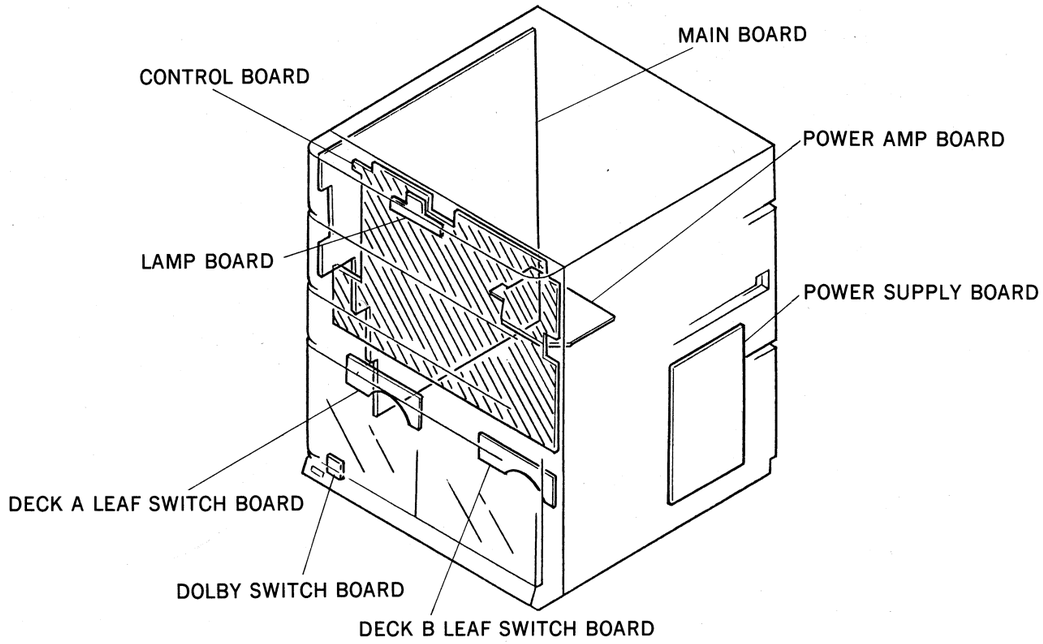
US1060M
10E2N



STK4122MK2



5-2. CIRCUIT BOARD LOCATION

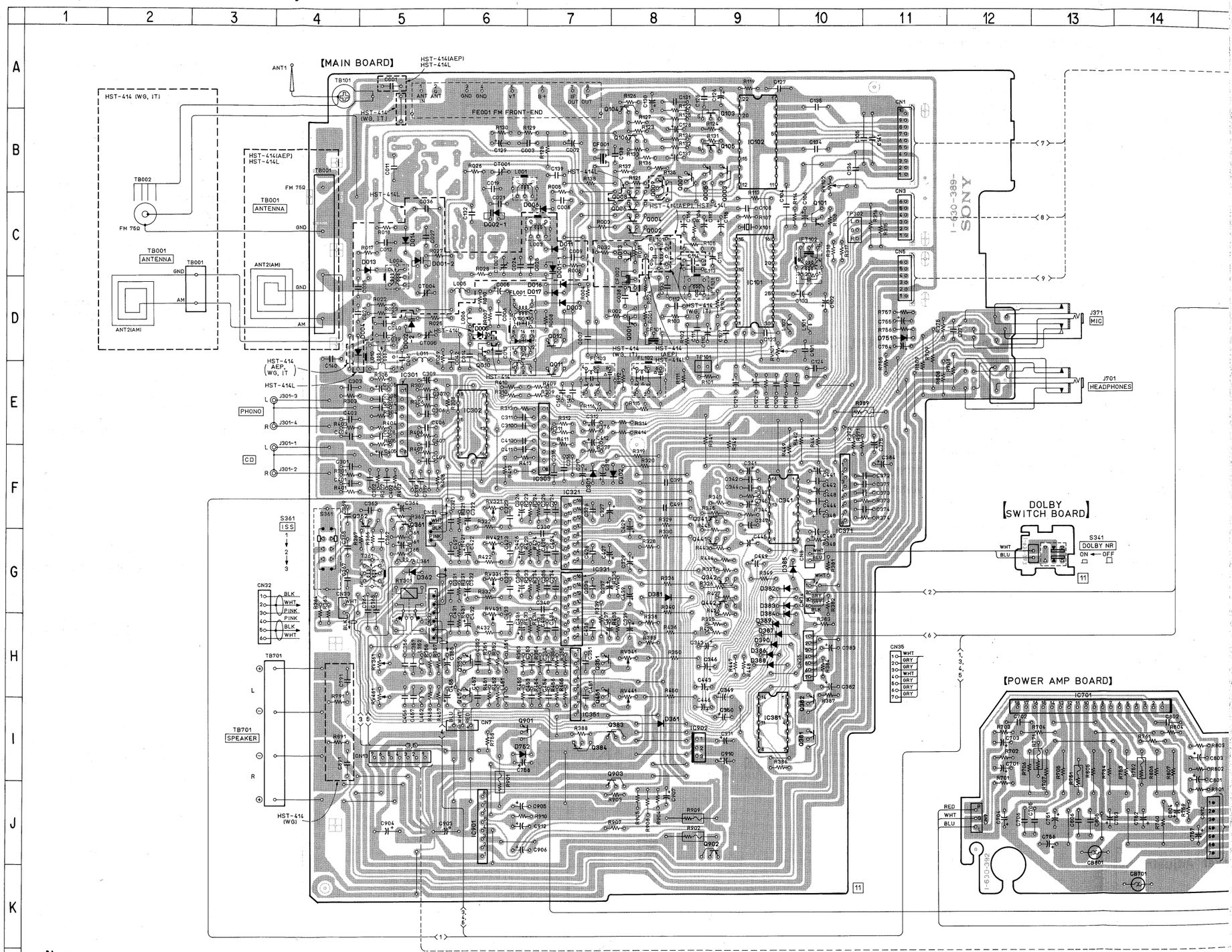


5-3. PRINTED WIRING BOARDS

● Refer to page8 for Semiconductor Lead Layouts.

• **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D100-1	C-7	IC101	D-9
D001-2	C-5	IC102	B-9
D002-1	C-6	IC201	G-28
D002-2	D-5	IC301	E-5
D003	D-7	IC302	E-6
D004	D-4	IC303	E-7
D005	D-6	IC321	G-7
D006	C-7	IC331	G-7
D011	C-7	IC341	F-10
D013	C-5	IC351	H-7
D014	C-5	IC371	F-10
D016	D-7	IC381	I-9
D017	D-7	IC501	J-29
D201	H-28	IC502	J-26
D202	G-27	IC551	G-25
D203	F-27	IC601	J-25
D204	F-27	IC701	I-13
D205	F-27	IC901	J-6
D207	F-27		
D208	F-27	Q001	D-8
D209	F-27	Q002	C-8
D210	E-27	Q003	B-9
D211	E-27	Q004	C-8
D214	F-27	Q005	B-9
D215	F-27	Q006	C-8
D216	F-28	Q007	B-8
D301	F-7	Q008	C-8
D302	F-8	Q009	B-8
D361	I-8	Q010	D-6
D362	G-5	Q011	E-7
D381	G-8	Q012	D-7
D382	G-10	Q013	C-8
D383	G-10	Q101	C-10
D384	H-10	Q103	B-9
D385	G-10	Q104	B-8
D386	H-9	Q105	B-9
D387	H-9	Q106	B-8
D388	H-9	Q201	G-29
D389	H-9	Q341	F-9
D390	H-9	Q342	G-9
D501	I-28	Q351	H-7
D502	I-28	Q352	H-6
D503	G-27	Q361	F-5
D505	H-29	Q362	F-5
D506	H-28	Q381	I-10
D507	H-27	Q382	I-10
D508	H-26	Q383	I-8
D509	J-27	Q384	I-7
D510	J-27	Q441	G-9
D511	G-30	Q442	G-9
D512	J-27	Q451	H-7
D513	I-27	Q552	H-6
D514	I-27	Q501	J-27
D751	D-11	Q502	I-27
D752	I-6	Q551	G-30
D911 (HST-414)	E-19	Q552	I-28
		Q553	H-26
D912 (HST-414)	E-19	Q601	I-27
		Q602	I-26
D911 (HST-414L)	H-19	Q901	I-6
		Q902	J-9
D912 (HST-414L)	H-19	Q903	I-8



Note:

- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⊡← indicates side identified with part number.

13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

DECK A

DECK B

【POWER SUPPLY BOARD】 HST-414

【POWER SUPPLY BOARD】 HST-414L

【LAMP BOARD】

【CONTROL BOARD】

LCD1 LIQUID CRYSTAL DISPLAY

【POWER AMP BOARD】

DOLBY SWITCH BOARD】

J371 MIC

J701 HEADPHONES

S341 DOLBY NR ON ⟷ OFF

NOT REPLACEABLE : BULT IN TRANSFORMER

AC IN

5 BAND STEREO GRAPHIC EQUALIZER

5-4. SCHEMATIC DAGRAM —DECK AMP SECTION— • Refer to page19 for IC Block Diagram.

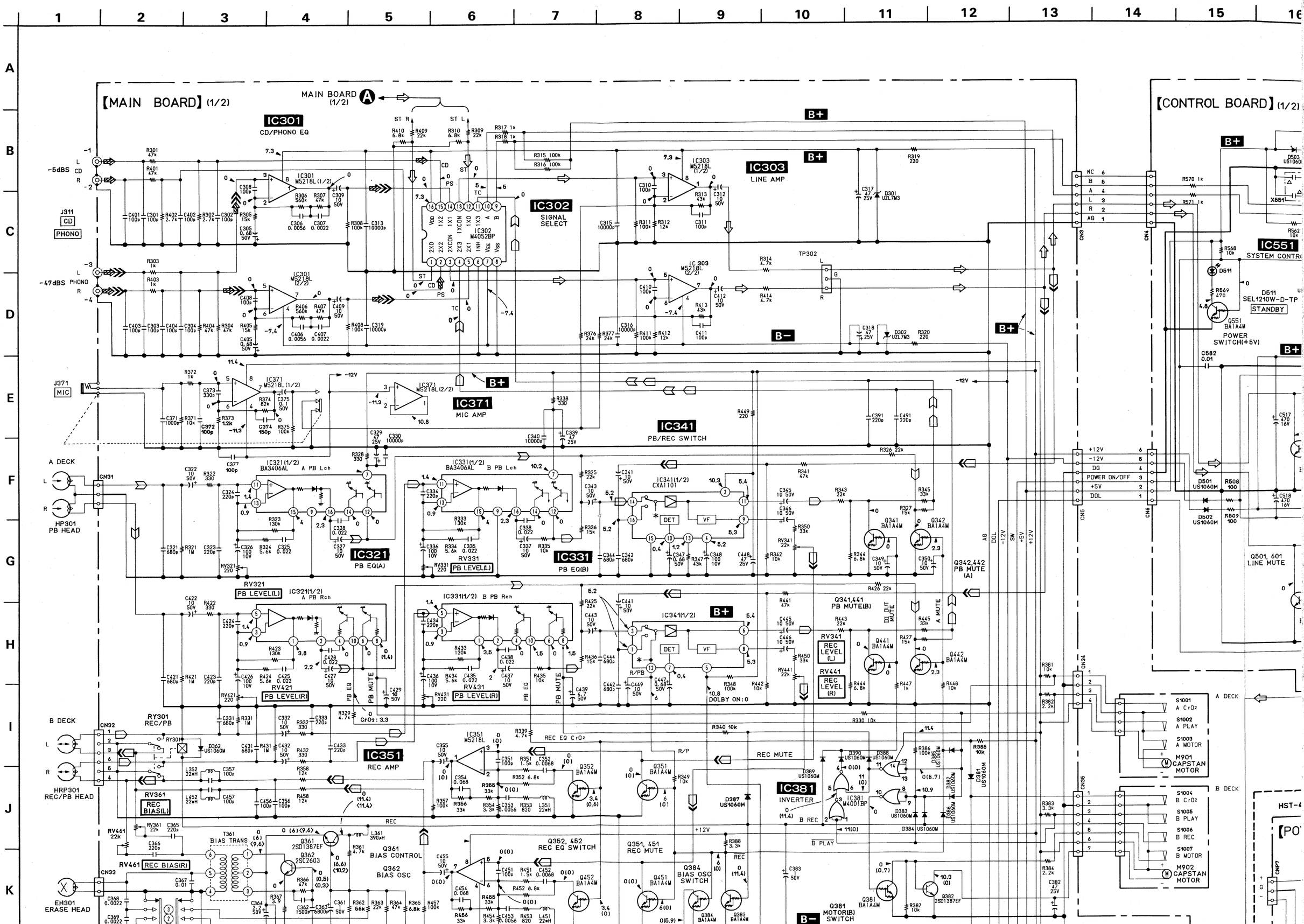
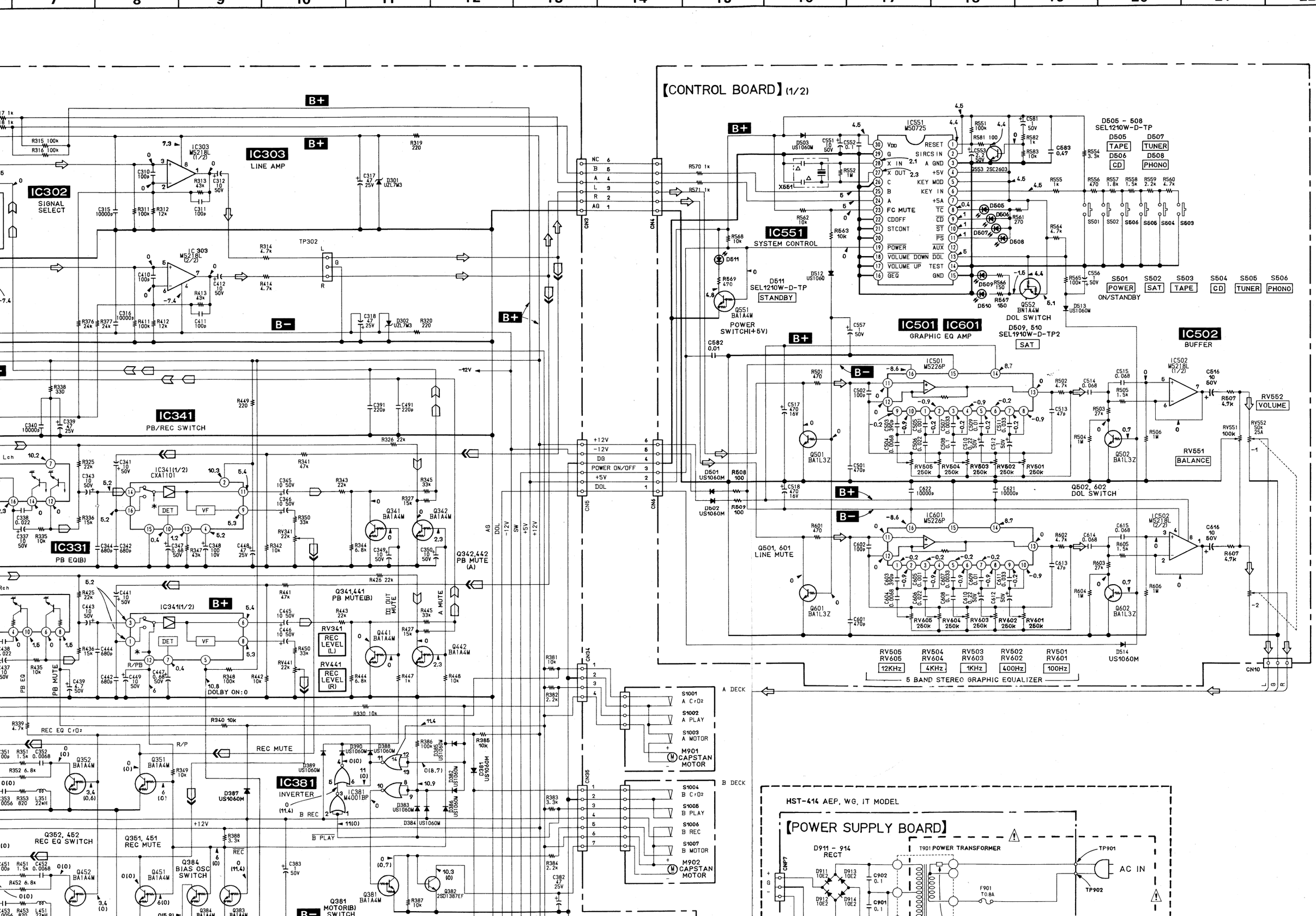
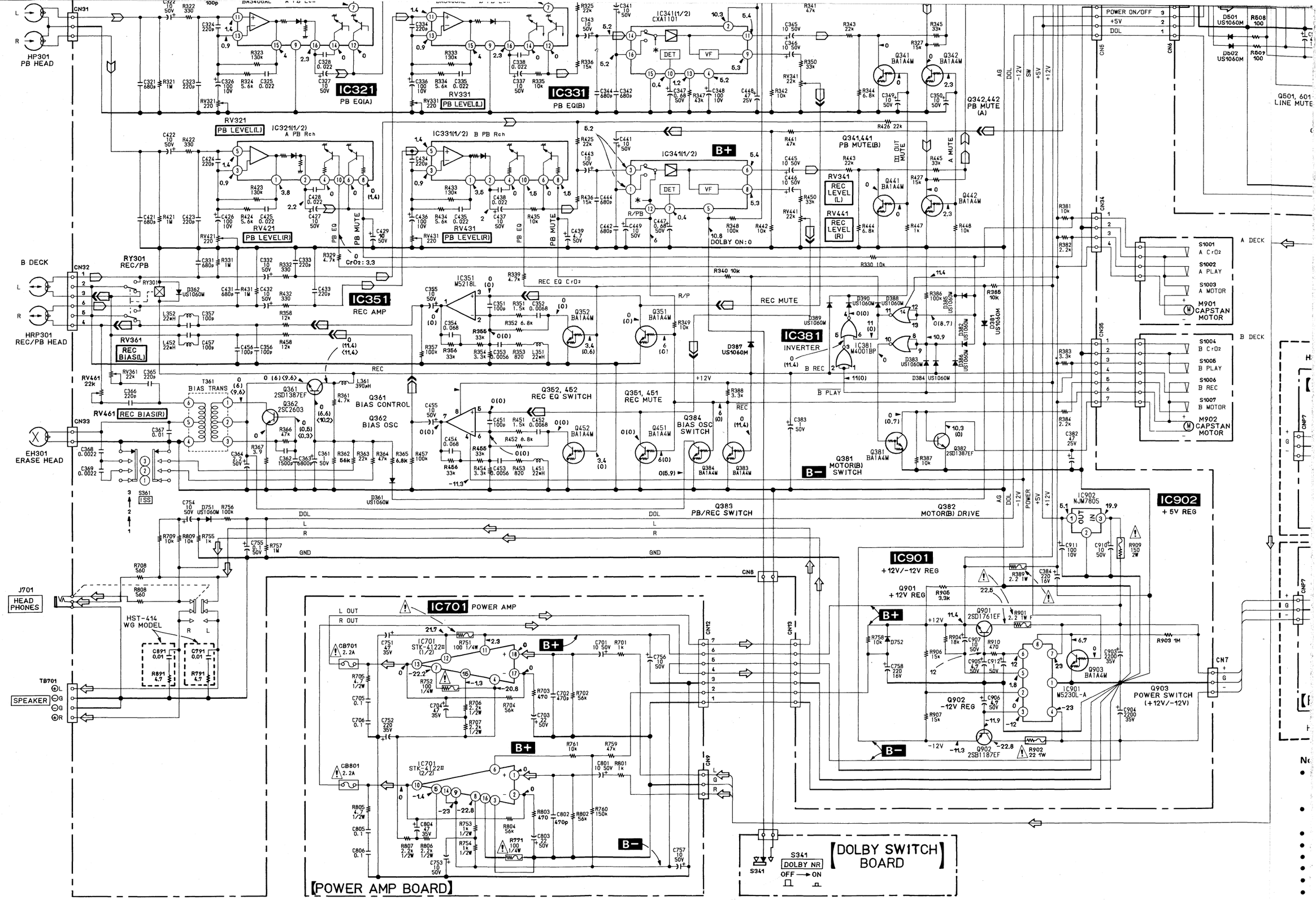
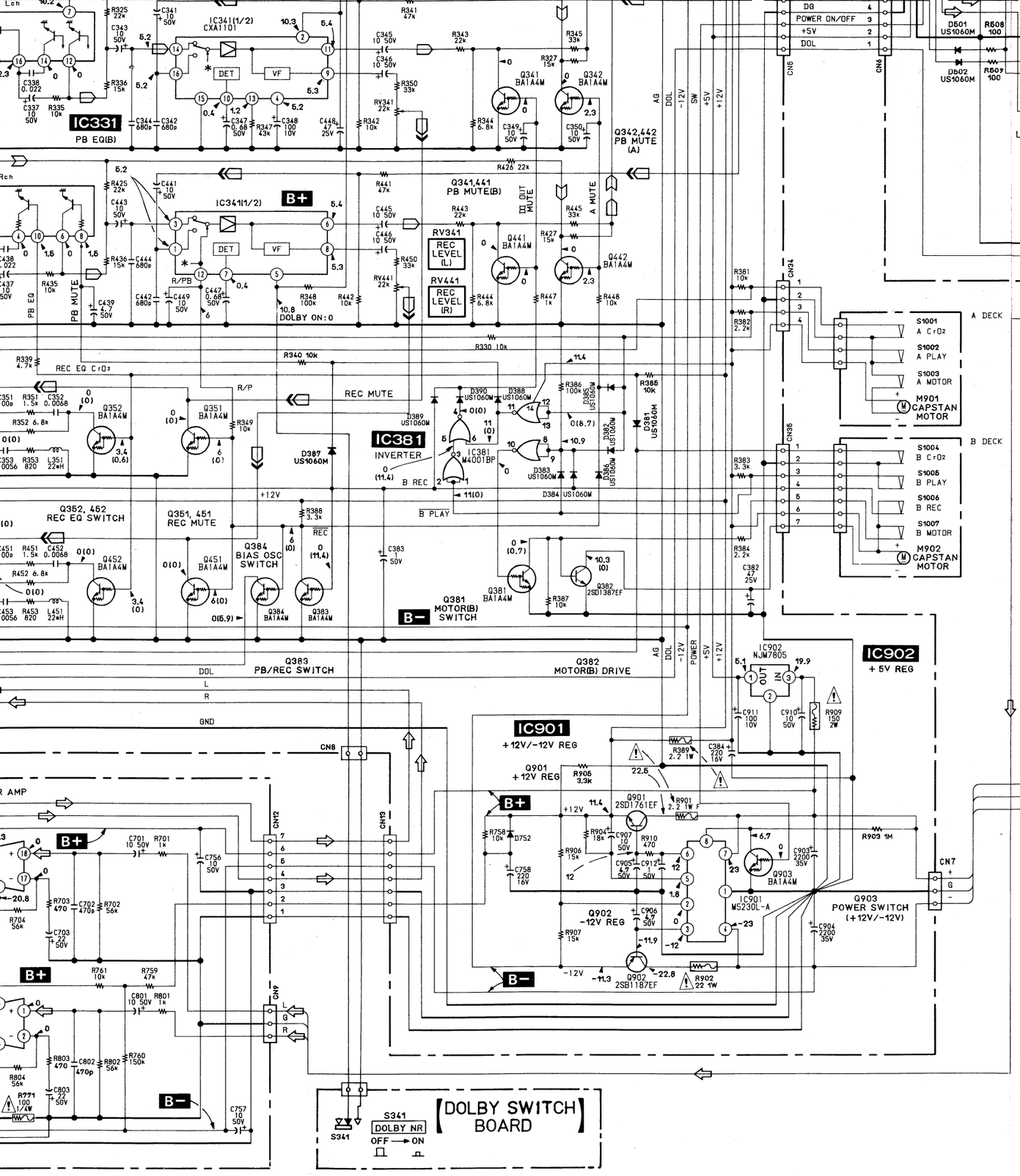


Diagram.


【CONTROL BOARD】(1/2)
IC303
LINE AMP
IC302
SIGNAL SELECT
IC341
PB/REC SWITCH
IC331
PB EQ(B)
IC381
INVERTER
IC551
SYSTEM CONTROL
IC501 IC601
GRAPHIC EQ AMP
IC502
BUFFER
D505 - 508
SEL1210W-D-TP
D505 TAPE
D506 CD
D507 TUNER
D508 PHONO
D511
SEL1210W-D-TP
STANDBY
D509, 510
SEL1910W-D-TP2
SAT
S501 POWER ON/STANDBY
S502 SAT
S503 TAPE
S504 CD
S505 TUNER
S506 PHONO
RV552 VOLUME
RV551 BALANCE
Q501, 601 LINE MUTE
Q502, 602 DOL SWITCH
POWER SWITCH(+5V)
RV505 RV605 12KHz
RV504 RV604 4KHz
RV503 RV603 1KHz
RV502 RV602 400Hz
RV501 RV601 100Hz
5 BAND STEREO GRAPHIC EQUALIZER
Q341,441 PB MUTE(B)
Q342,442 PB MUTE (A)
Q352, 452 REC EQ SWITCH
Q351, 451 REC MUTE
Q384 BIAS OSC SWITCH
Q381 MOTOR(B) SWITCH
A DECK
B DECK
S1001 A CrO2
S1002 A PLAY
S1003 A MOTOR
M901 CAPSTAN MOTOR
S1004 B CrO2
S1005 B PLAY
S1006 B REC
S1007 B MOTOR
M902 CAPSTAN MOTOR
HST-414 AEP, WG, IT MODEL
【POWER SUPPLY BOARD】
D911 - 914 RECT
T901 POWER TRANSFORMER
AC IN
F901 T0.8A
B+
B-
REC EQ CrO2
REC MUTE
B REC
B PLAY
REC
R/P
PB EQ
PB MUTE
DOLBY ON: 0


IC321
PB EQ(A)
IC331
PB EQ(B)
IC351
REC AMP
IC381
INVERTER
IC902
+5V REG
IC901
+12V/-12V REG
IC701 POWER AMP
[POWER AMP BOARD]
[DOLBY SWITCH BOARD]
HP301 PB HEAD
HRP301 REC/PB HEAD
EH301 ERASE HEAD
J701 HEAD PHONES
SPEAKER
HST-414 WG MODEL
RV321 PB LEVEL(L)
RV331 PB LEVEL(L)
RV421 PB LEVEL(R)
RV431 PB LEVEL(R)
RV341 REC LEVEL (L)
RV441 REC LEVEL (R)
RV361 REC BIAS(L)
RV461 REC BIAS(R)
RY301 REC/PB
S361 ISS
S341 DOLBY NR OFF → ON
T361 BIAS TRANS
Q361 2SD1387EF
Q362 2SC2603
Q361 BIAS CONTROL
Q362 BIAS OSC
Q352, 452 REC EQ SWITCH
Q351, 451 REC MUTE
Q384 BIAS OSC SWITCH
Q383 PB/REC SWITCH
Q381 MOTOR(B) SWITCH
Q382 MOTOR(B) DRIVE
Q342,442 PB MUTE (A)
Q341,441 PB MUTE(B)
Q501, 601 LINE MUTE
Q901 +12V REG
Q902 -12V REG
Q903 POWER SWITCH (+12V/-12V)
S1001 A CrO2
S1002 A PLAY
S1003 A MOTOR
S1004 B CrO2
S1005 B PLAY
S1006 B REC
S1007 B MOTOR
M901 CAPSTAN MOTOR
M902 CAPSTAN MOTOR
A DECK
B DECK
POWER ON/OFF
+5V
DOL
REC MUTE
PB MUTE
REC EQ CrO2
CrO2: 3.3
DOLBY ON: 0
B+
B-
B PLAY
B REC
REC
R/P
PB EQ
DET
VF
A MUTE
DIG OUT MUTE
AG
DOL
-12V
SW
+5V
+12V
POWER
GND



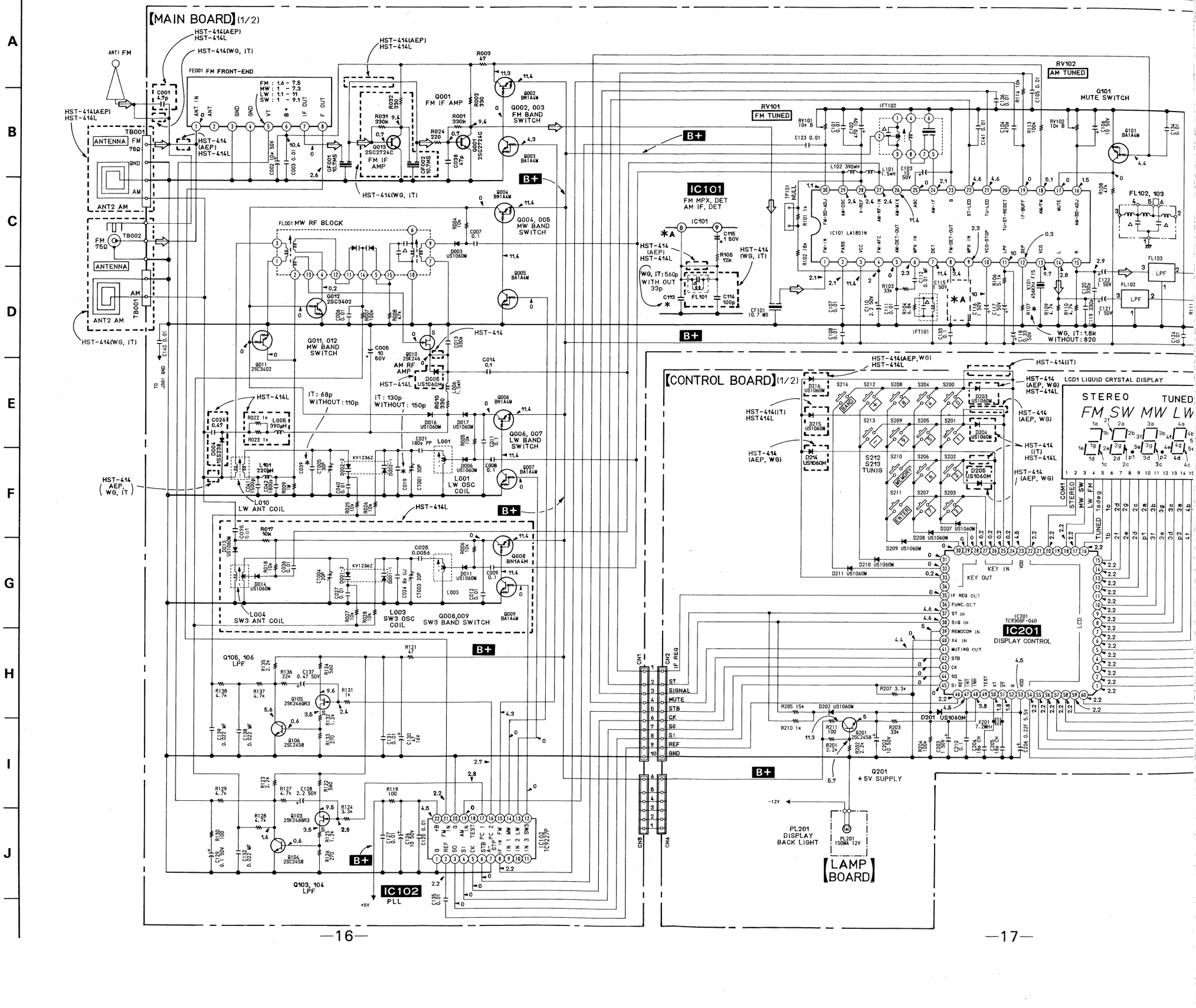
Note:

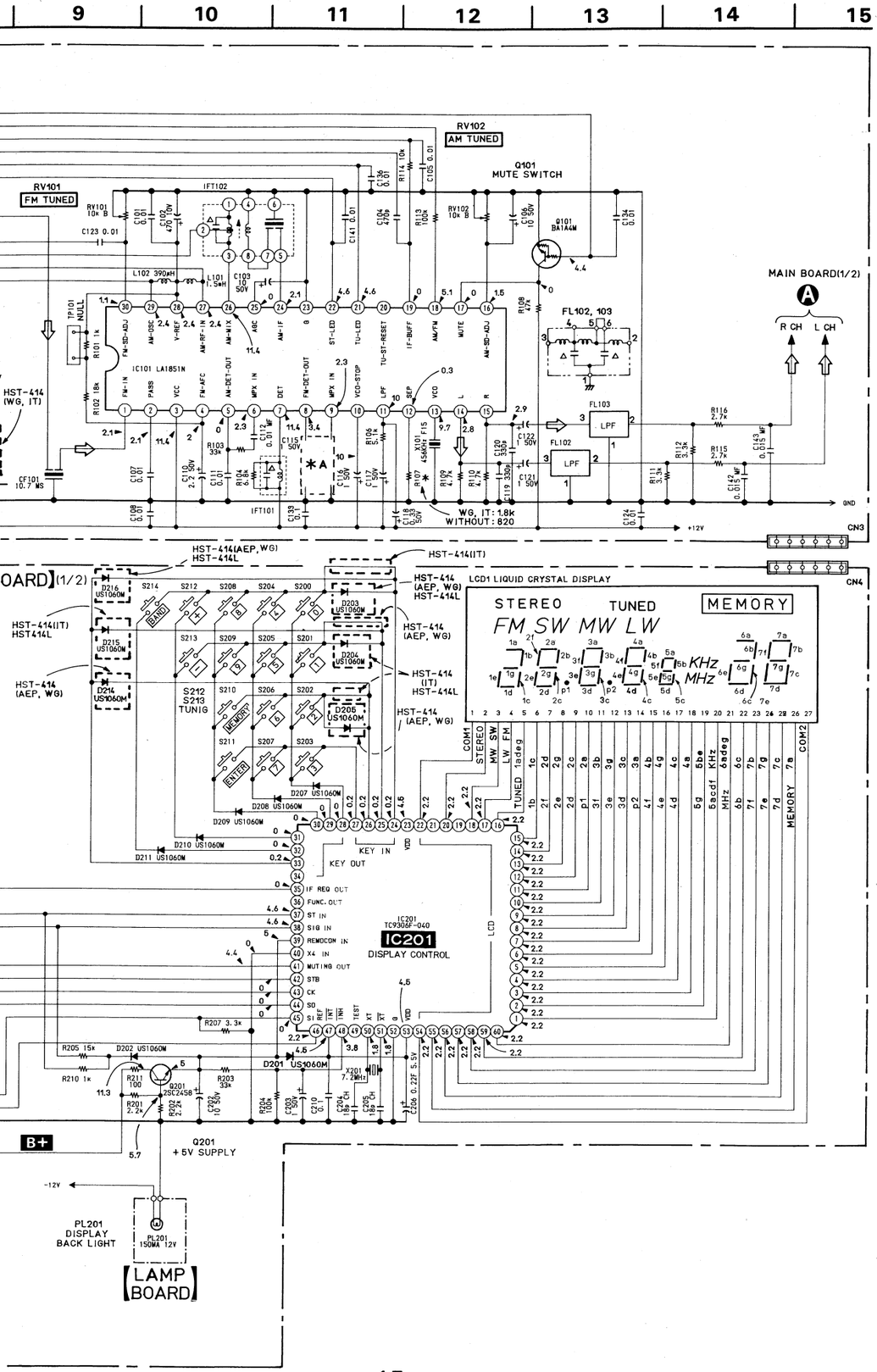
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ⏦ : fusible resistor.
- B+ : B+ Line
- B− : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark: FM(TUNER), PLAY(DECK A)
  ( ): DECK B NORMAL REC
  < >: DECK B CrO_2 REC
- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- Signal path.
  ⇨ : FM
  ⇨ : PB (DECK A)
  ⇨ : PB (DECK B)
  ⇨ : REC (DECK B)
  ⇨ : CD
  ⇨ : PHONO

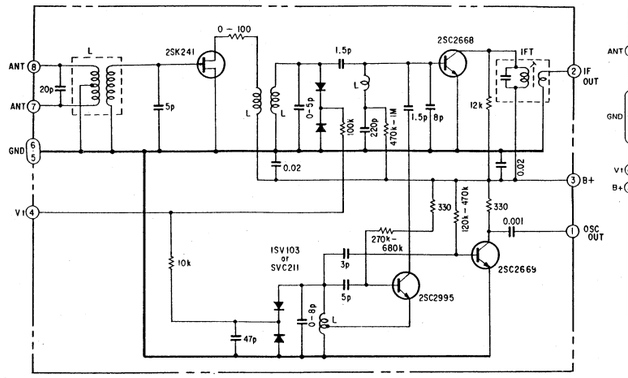
5-5. SCHEMATIC DIAGRAM —TUNER SECTION— ● Refer to page15 for note.



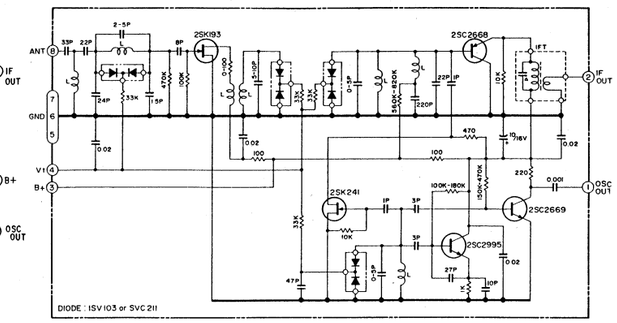


FM FRONT-END (FE 101)

AEP, Saudi Arabia model



WG, IT model



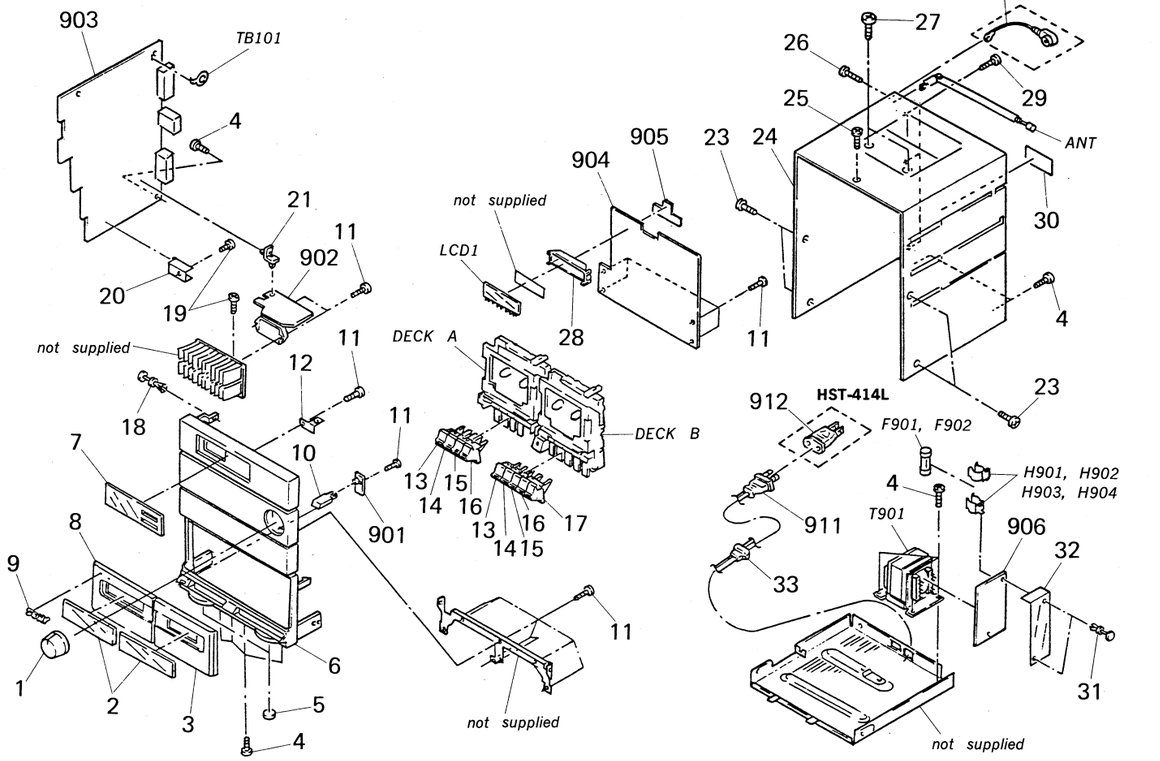
SECTION 6
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- EA·····Saudi Arabia.

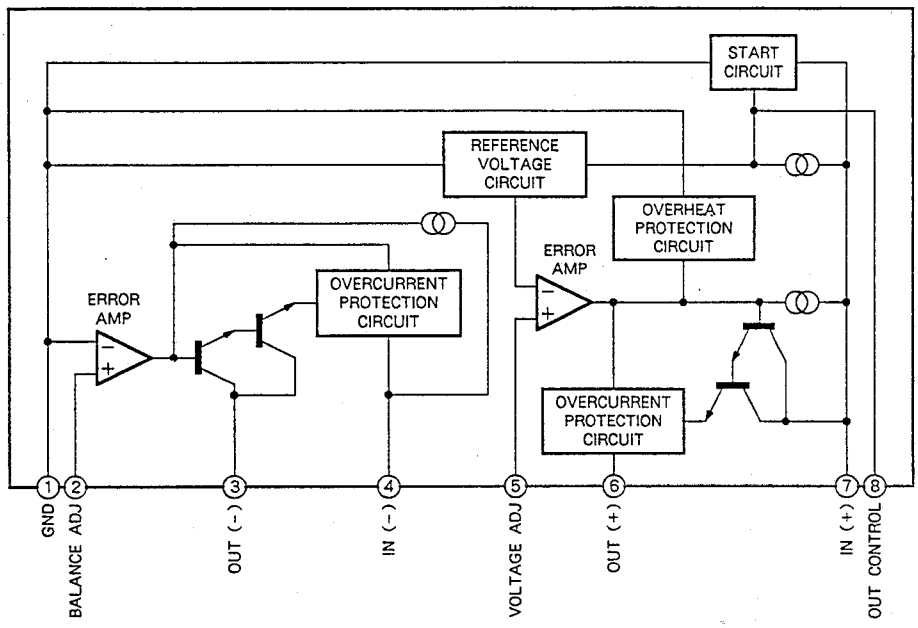
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. FRONT PANEL, CASE SECTION

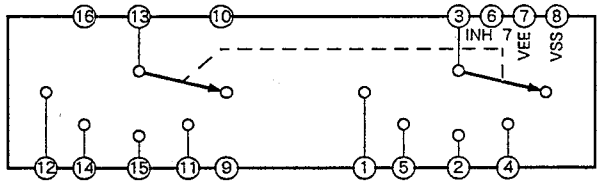


● IC BLOCK DIAGRAMS

M5230L-A



M4052BP



No.	Part No.	Description	Remarks
1	4-922-790-21	KNOB (VOLUME)	
2	4-931-101-01	WINDOW (CASSETTE)	
3	4-931-104-01	LID (B), CASSETTE	
4	7-682-547-04	SCREW +BVTT 3X6 (S)	
5	3-319-288-01	FOOT	
6	X-4915-472-1	(414L)...PANEL ASSY	
	X-4915-473-1	(414)....PANEL ASSY	
7	4-928-655-01	PLATE (ST), ORNAMENTAL	
8	4-931-103-01	LID (A), CASSETTE	
9	4-920-869-11	EMBLEM, SONY	
10	4-928-699-01	BUTTON (DOLBY)	
11	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
12	*4-928-660-01	BRACKET (CASE)	
13	4-928-697-01	BUTTON (TC)(▷)	
14	4-928-697-11	BUTTON (TC)(◀◀)	
15	4-928-697-21	BUTTON (TC)(▶▶)	
16	4-928-697-31	BUTTON (TC)(■⏏)	
17	4-928-697-41	BUTTON (TC)(❚❚)	
18	4-812-134-31	RIVET NYLON, 3.5	
19	7-682-548-04	SCREW +BVTT 3X8 (S)	
20	*3-309-144-21	HEAT SINK	
21	*4-922-413-01	HOLDER, PC BOARD	
22	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
23	3-704-366-01	SCREW (CASE) (M3X8)	
24	X-4915-470-1	(414L).....CASE ASSY	
	X-4915-471-1	(414:WG,IT)...CASE ASSY	
	X-4915-474-1	(414:AEP).....CASE ASSY	
25	7-682-547-09	SCREW +B 3X6	
26	7-682-550-09	SCREW +B 3X12	
27	7-685-649-01	SCREW +BVTP 3X14 TYPE1	
28	*4-928-665-01	HOUSE (LCD), WRITING	
29	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	

No.	Part No.	Description	Remarks
30	*4-928-680-01	(414L).....LABEL, MODEL NUMBER (Saudi Arabia)	
	*4-928-682-01	(414:AEP)...LABEL, MODEL NUMBER (AE)	
	*4-928-684-01	(414:WG)....LABEL, MODEL NUMBER (WG)	
	*4-928-685-01	(414:IT)....LABEL, MODEL NUMBER (IT)	
31	4-812-134-00	RIVET NYLON, 3.5	
32	*4-928-677-01	COVER (INSULATING)	
33	*3-703-244-00	BUSHING (2104), CORD	
901	*1-630-393-11	PC BOARD, DOLBY SW	
902	*1-630-392-11	PC BOARD, POWER AMP	
903	*A-4333-233-A	(414:WG)....MOUNTED PCB, MAIN	
	*A-4333-236-A	(414:AEP)...MOUNTED PCB, MAIN	
	*A-4333-239-A	(414L).....MOUNTED PCB, MAIN	
	*A-4333-253-A	(414:IT)....MOUNTED PCB, MAIN	
904	*A-4333-230-A	(414:IT)....MOUNTED PCB, CONTROL	
	*A-4333-234-A	(414:WG)....MOUNTED PCB, CONTROL	
	*A-4333-237-A	(414:AEP)...MOUNTED PCB, CONTROL	
	*A-4333-240-A	(414L).....MOUNTED PCB, CONTROL	
905	*1-630-394-11	PC BOARD, LAMP	
906	*1-630-391-11	PC BOARD, POWER SUPPLY	
911	⚠1-555-750-00	CORD, POWER	
912	⚠1-506-401-00	(414L)...ADAPTOR, CONVERSION	
913	*1-562-908-11	(414:WG,IT)..CONNECTOR, FEMALE(NO SHIELD)	
ANT1	1-501-270-00	ANTENNA, TELESCOPIC (FM)	
F901	⚠1-532-215-00	FUSE, TIME-LAG (0.8A)	
F902	⚠1-532-215-00	(414L)...FUSE, TIME-LAG (0.8A)	
H901	*1-533-213-31	(414L)...HOLDER, FUSE	
H902	*1-533-213-31	HOLDER, FUSE	
H903	*1-533-213-31	(414L)...HOLDER, FUSE	
H904	*1-533-213-31	HOLDER, FUSE	
LCD1	1-808-659-11	DISPLAY PANEL, LIQUID CRYISTAL	
T901	⚠1-449-544-11	(414L)...TRANSFORMER, POWER	
T901	⚠1-449-618-11	(414)....TRANSFORMER, POWER	
TB101	*4-925-530-01	PLATE, GROUND	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description
901	*1-630-393-11	PC BOARD, DOLBY SW
902	*1-630-392-11	PC BOARD, POWER AMP
903	*A-4333-233-A	(414:WG)....MOUNTED PCB, MAIN
	*A-4333-236-A	(414:AEP)...MOUNTED PCB, MAIN
	*A-4333-239-A	(414L).....MOUNTED PCB, MAIN
	*A-4333-253-A	(414:IT)....MOUNTED PCB, MAIN
904	*A-4333-230-A	(414:IT)....MOUNTED PCB, CONTROL
	*A-4333-234-A	(414:WG)....MOUNTED PCB, CONTROL
	*A-4333-237-A	(414:AEP)...MOUNTED PCB, CONTROL
	*A-4333-240-A	(414L).....MOUNTED PCB, CONTROL
905	*1-630-394-11	PC BOARD, LAMP
906	*1-630-391-11	PC BOARD, POWER SUPPLY
911 ⚠	1-555-750-00	CORD, POWER
912 ⚠	1-506-401-00	(414L)...ADAPTOR, CONVERSION
913	*1-562-908-11	(414:WG,IT)...CONNECTOR, FEMALE (NO SHIELD)
ANT1	1-501-270-00	ANTENNA, TELESCOPIC (FM)
C001	1-162-195-31	CERAMIC 4.7PF 10% 50V
C002	1-123-875-11	ELECT 10MF 20% 50V
C003	1-161-379-00	CERAMIC 0.01MF 30% 16V
C005	1-123-875-11	ELECT 10MF 20% 50V
C006	1-161-379-00	CERAMIC 0.01MF 30% 16V
C007	1-164-159-11	CERAMIC 0.1MF 50V
C008	1-164-159-11	CERAMIC 0.1MF 50V
C009	1-164-159-11	(414L)...CERAMIC 0.1MF 50V
C011	1-164-159-11	CERAMIC 0.1MF 50V
C012	1-161-379-00	(414L)...CERAMIC 0.01MF 30% 16V
C013	1-162-288-31	CERAMIC 330PF 10% 50V
C014	1-164-159-11	CERAMIC 0.1MF 50V
C019	1-101-361-00	(414:AEP,WG/414L) ...CERAMIC 150PF 5% 50V
C019	1-101-081-00	(414:IT)...CERAMIC 130PF 5% 50V
C021	1-103-707-00	(414L)...POLYSTYRENE 180PF 5% 50V
C024	1-102-945-00	(414L)...CERAMIC 8PF 0.5PF 50V
C025	1-130-480-00	(414L)...MYLAR 0.0056MF 5% 50V
C026	1-136-173-00	(414L)...FILM 0.47MF 5% 50V
C027	1-161-379-00	(414L)...CERAMIC 0.01MF 30% 16V
C035	1-161-379-00	(414L)...CERAMIC 0.01MF 30% 16V
C036	1-161-379-00	(414L)...CERAMIC 0.01MF 30% 16V
C038	1-162-215-31	CERAMIC 47PF 5% 50V
C039	1-102-815-00	(414:AEP,WG/414L) ...CERAMIC 110PF 5% 50V
C039	1-101-888-00	(414:IT)...CERAMIC 68PF 5% 50V
C040	1-161-379-00	CERAMIC 0.01MF 30% 16V
C041	1-161-374-11	CERAMIC 0.0015MF 30% 16V
C042	1-102-120-00	CERAMIC 0.0018MF 10% 50V

Ref.No.	Part No.	Description
C101	1-161-379-00	CERAMIC 0.01MF 30% 16V
C102	1-124-472-11	ELECT 470MF 20% 10V
C103	1-123-875-11	ELECT 10MF 20% 50V
C104	1-162-290-31	CERAMIC 470PF 10% 50V
C105	1-161-379-00	CERAMIC 0.01MF 30% 16V
C106	1-123-875-11	ELECT 10MF 20% 50V
C107	1-161-379-00	CERAMIC 0.01MF 30% 16V
C108	1-161-379-00	CERAMIC 0.01MF 30% 16V
C110	1-124-925-11	ELECT 2.2MF 20% 50V
C111	1-161-379-00	CERAMIC 0.01MF 30% 16V
C112	1-136-153-00	FILM 0.01MF 5% 50V
C113	1-162-211-31	(414:AEP/414L) ...CERAMIC 33PF 5% 50V
C113	1-162-291-31	(414:WG,IT) ...CERAMIC 560PF 10% 50V
C114	1-162-282-31	(414:WG,IT) ...CERAMIC 100PF 10% 50V
C115	1-124-499-11	ELECT 1MF 20% 50V
C116	1-124-499-11	ELECT 1MF 20% 50V
C117	1-124-499-11	ELECT 1MF 20% 50V
C118	1-124-252-00	ELECT 0.33MF 20% 50V
C119	1-162-288-31	CERAMIC 330PF 10% 50V
C120	1-162-288-31	CERAMIC 330PF 10% 50V
C121	1-124-499-11	ELECT 1MF 20% 50V
C122	1-124-499-11	ELECT 1MF 20% 50V
C123	1-161-379-00	CERAMIC 0.01MF 30% 16V
C124	1-161-379-00	CERAMIC 0.01MF 30% 16V
C125	1-161-379-00	CERAMIC 0.01MF 30% 16V
C126	1-123-875-11	ELECT 10MF 20% 50V
C127	1-161-379-00	CERAMIC 0.01MF 30% 16V
C128	1-124-925-11	ELECT 2.2MF 20% 50V
C129	1-124-463-00	ELECT 0.1MF 20% 50V
C130	1-124-477-11	ELECT 47MF 20% 25V
C131	1-161-379-00	CERAMIC 0.01MF 30% 16V
C132	1-136-157-00	FILM 0.022MF 5% 50V
C133	1-164-159-11	CERAMIC 0.1MF 50V
C134	1-161-379-00	CERAMIC 0.01MF 30% 16V
C135	1-161-379-00	CERAMIC 0.01MF 30% 16V
C136	1-161-379-00	CERAMIC 0.01MF 30% 16V
C137	1-124-902-00	ELECT 0.47MF 20% 50V
C138	1-136-157-00	FILM 0.022MF 5% 50V
C139	1-136-157-00	FILM 0.022MF 5% 50V
C140	1-161-379-00	CERAMIC 0.01MF 30% 16V
C141	1-161-379-00	CERAMIC 0.01MF 30% 16V
C142	1-136-155-00	FILM 0.015MF 5% 50V

Ref.No.	Part No.	Description			
C143	1-136-155-00	FILM	0.015MF	5%	50V
C202	1-123-875-11	ELECT	10MF	20%	50V
C203	1-124-499-11	ELECT	1MF	20%	50V
C204	1-162-205-31	CERAMIC	18PF	5%	50V
C205	1-162-205-31	CERAMIC	18PF	5%	50V
C206	1-125-486-11	CAP,DOUBLE LAYERS 0.22F			5.5V
C210	1-164-159-11	CERAMIC	0.1MF		50V
C301	1-162-282-31	CERAMIC	100PF	10%	50V
C302	1-162-282-31	CERAMIC	100PF	10%	50V
C303	1-162-282-31	CERAMIC	100PF	10%	50V
C304	1-162-282-31	CERAMIC	100PF	10%	50V
C305	1-124-254-00	ELECT	0.68MF	20%	50V
C306	1-130-480-00	MYLAR	0.0056MF	5%	50V
C307	1-130-475-00	MYLAR	0.0022MF	5%	50V
C308	1-162-282-31	CERAMIC	100PF	10%	50V
C309	1-123-875-11	ELECT	10MF	20%	50V
C310	1-162-282-31	CERAMIC	100PF	10%	50V
C311	1-162-282-31	CERAMIC	100PF	10%	50V
C312	1-123-875-11	ELECT	10MF	20%	50V
C313	1-161-379-00	CERAMIC	0.01MF	30%	16V
C315	1-161-379-00	CERAMIC	0.01MF	30%	16V
C316	1-161-379-00	CERAMIC	0.01MF	30%	16V
C317	1-124-477-11	ELECT	47MF	20%	25V
C318	1-124-477-11	ELECT	47MF	20%	25V
C319	1-161-379-00	CERAMIC	0.01MF	30%	16V
C321	1-162-292-31	CERAMIC	680PF	10%	50V
C322	1-123-875-11	ELECT	10MF	20%	50V
C323	1-162-286-31	CERAMIC	220PF	10%	50V
C324	1-162-286-31	CERAMIC	220PF	10%	50V
C325	1-136-157-00	FILM	0.022MF	5%	50V
C326	1-124-443-00	ELECT	100MF	20%	10V
C327	1-123-875-11	ELECT	10MF	20%	50V
C328	1-136-157-00	FILM	0.022MF	5%	50V
C329	1-124-477-11	ELECT	47MF	20%	25V
C330	1-161-379-00	CERAMIC	0.01MF	30%	16V
C331	1-162-292-31	CERAMIC	680PF	10%	50V
C332	1-123-875-11	ELECT	10MF	20%	50V
C333	1-162-286-31	CERAMIC	220PF	10%	50V
C334	1-162-286-31	CERAMIC	220PF	10%	50V
C335	1-136-157-00	FILM	0.022MF	5%	50V
C336	1-124-443-00	ELECT	100MF	20%	10V
C337	1-123-875-11	ELECT	10MF	20%	50V
C338	1-136-157-00	FILM	0.022MF	5%	50V
C339	1-124-477-11	ELECT	47MF	20%	25V
C340	1-161-379-00	CERAMIC	0.01MF	30%	16V
C341	1-123-875-11	ELECT	10MF	20%	50V
C342	1-162-292-31	CERAMIC	680PF	10%	50V
C343	1-123-875-11	ELECT	10MF	20%	50V
C344	1-162-292-31	CERAMIC	680PF	10%	50V
C345	1-123-875-11	ELECT	10MF	20%	50V
C346	1-123-875-11	ELECT	10MF	20%	50V
C347	1-124-254-00	ELECT	0.68MF	20%	50V
C348	1-124-443-00	ELECT	100MF	20%	10V
C349	1-123-875-11	ELECT	10MF	20%	50V
C350	1-123-875-11	ELECT	10MF	20%	50V
C351	1-162-282-31	CERAMIC	100PF	10%	50V
C352	1-130-481-00	MYLAR	0.0068MF	5%	50V

Ref.No.	Part No.	Description			
C353	1-130-480-00	MYLAR	0.0056MF	5%	50V
C354	1-136-163-00	FILM	0.068MF	5%	50V
C355	1-123-875-11	ELECT	10MF	20%	50V
C356	1-162-282-31	CERAMIC	100PF	10%	50V
C357	1-162-282-31	CERAMIC	100PF	10%	50V
C361	1-124-499-11	ELECT	1MF	20%	50V
C362	1-161-374-11	CERAMIC	0.0015MF	30%	16V
C363	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C364	1-124-925-11	ELECT	2.2MF	20%	50V
C365	1-162-286-31	CERAMIC	220PF	10%	50V
C366	1-162-286-31	CERAMIC	220PF	10%	50V
C367	1-136-153-00	FILM	0.01MF	5%	50V
C368	1-130-475-00	MYLAR	0.0022MF	5%	50V
C369	1-130-475-00	MYLAR	0.0022MF	5%	50V
C371	1-162-294-31	CERAMIC	0.001MF	10%	50V
C372	1-162-282-31	CERAMIC	100PF	10%	50V
C373	1-162-288-31	CERAMIC	330PF	10%	50V
C374	1-162-284-31	CERAMIC	150PF	10%	50V
C375	1-124-463-00	ELECT	0.1MF	20%	50V
C376	1-162-282-31	CERAMIC	100PF	10%	50V
C377	1-162-282-31	CERAMIC	100PF	10%	50V
C382	1-124-477-11	ELECT	47MF	20%	25V
C383	1-124-499-11	ELECT	1MF	20%	50V
C384	1-124-120-11	ELECT	220MF	20%	16V
C391	1-162-286-31	CERAMIC	220PF	10%	50V
C401	1-162-282-31	CERAMIC	100PF	10%	50V
C402	1-162-282-31	CERAMIC	100PF	10%	50V
C403	1-162-282-31	CERAMIC	100PF	10%	50V
C404	1-162-282-31	CERAMIC	100PF	10%	50V
C405	1-124-254-00	ELECT	0.68MF	20%	50V
C406	1-130-480-00	MYLAR	0.0056MF	5%	50V
C407	1-130-475-00	MYLAR	0.0022MF	5%	50V
C408	1-162-282-31	CERAMIC	100PF	10%	50V
C409	1-123-875-11	ELECT	10MF	20%	50V
C410	1-162-282-31	CERAMIC	100PF	10%	50V
C411	1-162-282-31	CERAMIC	100PF	10%	50V
C412	1-123-875-11	ELECT	10MF	20%	50V
C421	1-162-292-31	CERAMIC	680PF	10%	50V
C422	1-123-875-11	ELECT	10MF	20%	50V
C423	1-162-286-31	CERAMIC	220PF	10%	50V
C424	1-162-286-31	CERAMIC	220PF	10%	50V
C425	1-136-157-00	FILM	0.022MF	5%	50V
C426	1-124-443-00	ELECT	100MF	20%	10V
C427	1-123-875-11	ELECT	10MF	20%	50V
C428	1-136-157-00	FILM	0.022MF	5%	50V
C429	1-123-875-11	ELECT	10MF	20%	50V
C431	1-162-292-31	CERAMIC	680PF	10%	50V
C432	1-123-875-11	ELECT	10MF	20%	50V
C433	1-162-286-31	CERAMIC	220PF	10%	50V
C434	1-162-286-31	CERAMIC	220PF	10%	50V
C435	1-136-157-00	FILM	0.022MF	5%	50V
C436	1-124-443-00	ELECT	100MF	20%	10V
C437	1-123-875-11	ELECT	10MF	20%	50V
C438	1-136-157-00	FILM	0.022MF	5%	50V
C439	1-123-875-11	ELECT	10MF	20%	50V
C441	1-123-875-11	ELECT	10MF	20%	50V
C442	1-162-292-31	CERAMIC	680PF	10%	50V

Ref.No.	Part No.	Description			
C443	1-123-875-11	ELECT	10MF	20%	50V
C444	1-162-292-31	CERAMIC	680PF	10%	50V
C445	1-123-875-11	ELECT	10MF	20%	50V
C446	1-123-875-11	ELECT	10MF	20%	50V
C447	1-124-254-00	ELECT	0.68MF	20%	50V
C448	1-124-477-11	ELECT	47MF	20%	25V
C449	1-123-875-11	ELECT	10MF	20%	50V
C451	1-162-282-31	CERAMIC	100PF	10%	50V
C452	1-130-481-00	MYLAR	0.0068MF	5%	50V
C453	1-130-480-00	MYLAR	0.0056MF	5%	50V
C454	1-136-163-00	FILM	0.068MF	5%	50V
C455	1-123-875-11	ELECT	10MF	20%	50V
C456	1-162-282-31	CERAMIC	100PF	10%	50V
C457	1-162-282-31	CERAMIC	100PF	10%	50V
C491	1-162-286-31	CERAMIC	220PF	10%	50V
C501	1-162-290-31	CERAMIC	470PF	10%	50V
C502	1-162-282-31	CERAMIC	100PF	10%	50V
C503	1-162-289-31	CERAMIC	390PF	10%	50V
C504	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C505	1-162-294-31	CERAMIC	0.001MF	10%	50V
C506	1-161-494-00	CERAMIC	0.022MF		25V
C507	1-161-327-00	CERAMIC	0.0033MF	30%	16V
C508	1-164-159-11	CERAMIC	0.1MF		50V
C509	1-161-379-00	CERAMIC	0.01MF	30%	16V
C510	1-124-464-11	ELECT	0.22MF	20%	50V
C511	1-136-159-00	FILM	0.033MF	5%	50V
C512	1-124-499-11	ELECT	1MF	20%	50V
C513	1-162-215-31	CERAMIC	47PF	5%	50V
C514	1-136-163-00	FILM	0.068MF	5%	50V
C515	1-136-163-00	FILM	0.068MF	5%	50V
C516	1-123-875-11	ELECT	10MF	20%	50V
C517	1-126-103-11	ELECT	470MF	20%	16V
C518	1-126-103-11	ELECT	470MF	20%	16V
C551	1-123-875-11	ELECT	10MF	20%	50V
C552	1-164-159-11	CERAMIC	0.1MF		50V
C553	1-124-925-11	ELECT	2.2MF	20%	50V
C556	1-124-499-11	ELECT	1MF	20%	50V
C557	1-124-499-11	ELECT	1MF	20%	50V
C581	1-124-499-11	ELECT	1MF	20%	50V
C582	1-161-379-00	CERAMIC	0.01MF	30%	16V
C583	1-136-173-00	FILM	0.47MF	5%	50V
C601	1-162-290-31	CERAMIC	470PF	10%	50V
C602	1-162-282-31	CERAMIC	100PF	10%	50V
C603	1-162-289-31	CERAMIC	390PF	10%	50V
C604	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C605	1-162-294-31	CERAMIC	0.001MF	10%	50V
C606	1-161-494-00	CERAMIC	0.022MF		25V
C607	1-161-327-00	CERAMIC	0.0033MF	30%	16V
C608	1-164-159-11	CERAMIC	0.1MF		50V
C609	1-161-379-00	CERAMIC	0.01MF	30%	16V
C610	1-124-464-11	ELECT	0.22MF	20%	50V
C611	1-136-159-00	FILM	0.033MF	5%	50V
C612	1-124-499-11	ELECT	1MF	20%	50V
C613	1-162-215-31	CERAMIC	47PF	5%	50V
C614	1-136-163-00	FILM	0.068MF	5%	50V
C615	1-136-163-00	FILM	0.068MF	5%	50V
C616	1-123-875-11	ELECT	10MF	20%	50V

Ref.No.	Part No.	Description			
C621	1-161-379-00	CERAMIC	0.01MF	30%	16V
C622	1-161-379-00	CERAMIC	0.01MF	30%	16V
C701	1-123-875-11	ELECT	10MF	20%	50V
C702	1-162-290-31	CERAMIC	470PF	10%	50V
C703	1-126-233-11	ELECT	22MF	20%	50V
C704	1-124-910-11	ELECT	47MF	20%	35V
C705	1-164-159-11	CERAMIC	0.1MF		50V
C706	1-164-159-11	CERAMIC	0.1MF		50V
C751	1-124-910-11	ELECT	47MF	20%	35V
C752	1-124-484-11	ELECT	220MF	20%	35V
C753	1-123-875-11	ELECT	10MF	20%	50V
C754	1-123-875-11	ELECT	10MF	20%	50V
C755	1-124-463-00	ELECT	0.1MF	20%	50V
C756	1-123-875-11	ELECT	10MF	20%	50V
C757	1-123-875-11	ELECT	10MF	20%	50V
C758	1-124-120-11	ELECT	220MF	20%	16V
C791	1-136-153-00	(414:WG)...CERAMIC 0.01MF		5%	50V
C801	1-123-875-11	ELECT	10MF	20%	50V
C802	1-162-290-31	CERAMIC	470PF	10%	50V
C803	1-126-233-11	ELECT	22MF	20%	50V
C804	1-124-910-11	ELECT	47MF	20%	35V
C805	1-164-159-11	CERAMIC	0.1MF		50V
C806	1-164-159-11	CERAMIC	0.1MF		50V
C891	1-136-153-00	(414:WG)...CERAMIC 0.01MF		5%	50V
C901	1-136-165-00	FILM	0.1MF	5%	50V
C902	1-136-165-00	FILM	0.1MF	5%	50V
C903	1-124-618-11	ELECT	2200MF	20%	35V
C904	1-124-618-11	ELECT	2200MF	20%	35V
C905	1-124-927-11	ELECT	4.7MF	20%	50V
C906	1-124-927-11	ELECT	4.7MF	20%	50V
C907	1-123-875-11	ELECT	10MF	20%	50V
C910	1-123-875-11	ELECT	10MF	20%	50V
C911	1-124-443-00	ELECT	100MF	20%	10V
C912	1-124-499-11	ELECT	1MF	20%	50V
CB701⚠	1-532-564-00	BREAKER, CIRCUIT			
CB801⚠	1-532-564-00	BREAKER, CIRCUIT			
CF001	1-567-389-11	FILTER, CERAMIC (10.7MHz)			
CF002	1-567-389-11	(414:WG,IT)...FILTER, CERAMIC(10.7MHz)			
CF101	1-567-389-11	FILTER, CERAMIC (10.7MHz)			
CN1	*1-566-926-11	SOCKET, CONNECTOR 10P			
CN2	*1-566-924-11	PLUG, CONNECTOR 10P			
CN3	*1-565-349-11	SOCKET, CONNECTOR 6P			
CN4	*1-565-350-11	PLUG, CONNECTOR 6P			
CN5	*1-565-349-11	SOCKET, CONNECTOR 6P			
CN6	*1-565-350-11	PLUG, CONNECTOR 6P			
CN7	*1-560-061-00	PIN, CONNECTOR 3P			
CN8	*1-564-336-00	PIN, CONNECTOR 2P			
CN9	*1-564-518-11	PLUG, CONNECTOR 3P			
CN12	*1-565-973-11	PLUG (WITH CONNECTOR) (L) 7P			
CN13	*1-565-956-11	SOCKET, CONNECTOR 7P			
CN31	*1-564-506-11	PLUG, CONNECTOR 3P			
CN32	*1-564-509-11	PLUG, CONNECTOR 6P			
CN33	*1-564-505-11	PLUG, CONNECTOR 2P			
CN34	*1-564-338-00	PIN, CONNECTOR 4P			
CN35	*1-564-341-11	PIN, CONNECTOR 7P			

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description
CT001	1-141-266-31	CAP, TRIMMER (30PF)
CT003	1-141-227-00	(414L)...CAP, TRIMMER (20PF)
CT004	1-141-227-00	(414L)...CAP, TRIMMER (20PF)
CT005	1-141-266-31	CAP, TRIMMER (30PF)
D001	8-719-923-64	(414L)...DIODE KV1236D
D002	8-719-923-64	DIODE KV1236D
D003	8-719-000-26	DIODE US1060M
D004	8-719-903-27	(414L)...DIODE 1SS168
D005	8-719-000-26	(414L)...DIODE US1060M
D006	8-719-000-26	DIODE US1060M
D011	8-719-000-26	(414L)...DIODE US1060M
D013	8-719-000-26	(414L)...DIODE US1060M
D014	8-719-000-26	(414L)...DIODE US1060M
D016	8-719-000-26	DIODE US1060M
D017	8-719-000-26	DIODE US1060M
D201	8-719-000-26	DIODE US1060M
D202	8-719-000-26	DIODE US1060M
D203	8-719-000-26	(414:AEP,WG/414L)...DIODE US1060M
D204	8-719-000-26	(414:IT/414L)...DIODE US1060M
D205	8-719-000-26	(414:AEP,WG)....DIODE US1060M
D207	8-719-000-26	DIODE US1060M
D208	8-719-000-26	DIODE US1060M
D209	8-719-000-26	DIODE US1060M
D210	8-719-000-26	DIODE US1060M
D211	8-719-000-26	DIODE US1060M
D214	8-719-000-26	(414:AEP,WG)....DIODE US1060M
D215	8-719-000-26	(414:IT/414L)...DIODE US1060M
D216	8-719-000-26	(414:AEP,WG/414L)DIODE US1060M
D301	8-719-933-57	DIODE HZS7B2L
D302	8-719-933-57	DIODE HZS7B2L
D361	8-719-000-26	DIODE US1060M
D362	8-719-000-26	DIODE US1060M
D381	8-719-000-26	DIODE US1060M
D382	8-719-000-26	DIODE US1060M
D383	8-719-000-26	DIODE US1060M
D384	8-719-000-26	DIODE US1060M
D385	8-719-000-26	DIODE US1060M
D386	8-719-000-26	DIODE US1060M
D387	8-719-000-26	DIODE US1060M
D388	8-719-000-26	DIODE US1060M
D389	8-719-000-26	DIODE US1060M
D390	8-719-000-26	DIODE US1060M
D501	8-719-000-26	DIODE US1060M
D502	8-719-000-26	DIODE US1060M
D503	8-719-000-26	DIODE US1060M
D505	8-719-303-13	DIODE SEL1210W (TAPE)
D506	8-719-303-13	DIODE SEL1210W (CD)
D507	8-719-303-13	DIODE SEL1210W (TUNER)
D508	8-719-303-13	DIODE SEL1210W (PHONO)
D509	8-719-303-59	DIODE SEL1910W (SAT)
D510	8-719-303-59	DIODE SEL1910W (SAT)
D511	8-719-303-13	DIODE SEL1210W (STANDBY)
D512	8-719-000-26	DIODE US1060M
D513	8-719-000-26	DIODE US1060M
D514	8-719-000-26	DIODE US1060M
D751	8-719-000-26	DIODE US1060M
D752	8-719-000-26	DIODE US1060M
D911	8-719-200-77	DIODE 10E2N
D912	8-719-200-77	DIODE 10E2N
D913	8-719-200-77	DIODE 10E2N
D914	8-719-200-77	DIODE 10E2N
F901 ⚠	1-532-215-00	FUSE, TIME-LAG (0.8A)
F902 ⚠	1-532-215-00	(414L)...FUSE, TIME-LAG (0.8A)
FE001	1-465-006-11	(414:AEP/414L)..FRONT END(FM)(2 GANG)
FE001	1-465-007-11	(414:WG,IT).....FRONT END (FM)
FL001	1-235-936-11	ENCAPSULATED COMPONENT (MW RF BROCK)
FL101	1-236-465-11	(414:WG,IT)...ENCAPSULATED COMPONENT
FL102	1-235-164-00	FILTER, LOW PASS
FL103	1-235-164-00	FILTER, LOW PASS
H901	*1-533-213-31	(414L)...HOLDER, FUSE
H902	*1-533-213-31	HOLDER, FUSE
H903	*1-533-213-31	(414L)...HOLDER, FUSE
H904	*1-533-213-31	HOLDER, FUSE
IC101	8-759-821-45	IC LA1851N
IC102	8-759-231-01	IC TC9227P
IC201	8-759-233-91	IC TC9306F-040
IC301	8-759-600-02	IC M5218L
IC302	8-759-240-52	IC TC4052BP
IC303	8-759-600-02	IC M5218L
IC321	8-759-971-24	IC BA3406AL
IC331	8-759-971-24	IC BA3406AL
IC341	8-752-031-83	IC CXA1101P
IC351	8-759-600-02	IC M5218L
IC371	8-759-600-02	IC M5218L
IC381	8-759-601-06	IC M4001BP
IC501	8-759-602-04	IC M5226P
IC502	8-759-600-02	IC M5218L
IC551	8-759-632-01	IC M50725-116SP
IC601	8-759-602-04	IC M5226P
IC701	8-749-900-95	IC STK4122MK2
IC901	8-759-602-66	IC M5230L-A
IC902	8-759-604-29	IC M5F7805
IFT101	1-404-807-11	TRANSFORMER, DISCRIMINATOR
IFT102	1-404-713-11	TRANSFORMER, IF
J301	1-565-259-21	JACK, PIN 4P (CD/PHONO)
J371	1-562-837-21	JACK (MIC)
J701	1-562-837-11	JACK (HEADPHONES)
L001	1-406-286-11	COIL (LW OSC)
L003	1-406-339-11	(414L)...COIL (OSC,SW3)
L004	1-402-424-11	(414L)...COIL (ANT,SW3)
L005	1-410-489-11	(414L)...INDUCTOR 390UH
L006	1-408-399-00	INDUCTOR 1.5MMH
L010	1-402-425-11	COIL (ANT,LW)
L011	1-408-425-00	INDUCTOR 220UH
L101	1-408-399-00	INDUCTOR 1.5MMH
L102	1-410-489-11	INDUCTOR 390UH
L351	1-410-779-21	INDUCTOR 22MMH
L352	1-410-779-21	INDUCTOR 22MMH
L361	1-410-489-11	INDUCTOR 390UH
L451	1-410-779-21	INDUCTOR 22MMH
L452	1-410-779-21	INDUCTOR 22MMH
LCD1	1-808-659-11	DISPLAY PANEL, LIQUID CRYISTAL
PL201	1-518-511-21	LAMP, PILOT (150mA 12V)

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Ref.No.	Part No.	Description
Q001	8-729-672-42	TRANSISTOR 2SC2724-C
Q002	8-729-900-61	TRANSISTOR DTA114ES
Q003	8-729-900-80	TRANSISTOR DTC114ES
Q004	8-729-900-61	TRANSISTOR DTA114ES
Q005	8-729-900-80	TRANSISTOR DTC114ES
Q006	8-729-900-61	TRANSISTOR DTA114ES
Q007	8-729-900-80	TRANSISTOR DTC114ES
Q008	8-729-900-61	(414L)...TRANSISTOR DTA114ES
Q009	8-729-900-80	(414L)...TRANSISTOR DTC114ES
Q010	8-729-202-67	TRANSISTOR 2SK246GR3
Q011	8-729-900-80	TRANSISTOR DTC114ES
Q012	8-729-900-80	TRANSISTOR DTC114ES
Q013	8-729-672-42	(414:WG,IT)...TRANSISTOR 2SC2724-C
Q101	8-729-900-80	TRANSISTOR DTC114ES
Q103	8-729-202-67	TRANSISTOR 2SK246GR3
Q104	8-729-245-82	TRANSISTOR 2SC2458-Y
Q105	8-729-202-67	TRANSISTOR 2SK246GR3
Q106	8-729-245-82	TRANSISTOR 2SC2458-Y
Q201	8-729-245-82	TRANSISTOR 2SC2458-Y
Q341	8-729-900-80	TRANSISTOR DTC114ES
Q342	8-729-900-80	TRANSISTOR DTC114ES
Q351	8-729-900-80	TRANSISTOR DTC114ES
Q352	8-729-900-80	TRANSISTOR DTC114ES
Q361	8-729-801-93	TRANSISTOR 2SD1387
Q362	8-729-245-82	TRANSISTOR 2SC2458-Y
Q381	8-729-900-80	TRANSISTOR DTC114ES
Q382	8-729-801-93	TRANSISTOR 2SD1387
Q383	8-729-900-80	TRANSISTOR DTC114ES
Q384	8-729-900-80	TRANSISTOR DTC114ES
Q441	8-729-900-80	TRANSISTOR DTC114ES
Q442	8-729-900-80	TRANSISTOR DTC114ES
Q451	8-729-900-80	TRANSISTOR DTC114ES
Q452	8-729-900-80	TRANSISTOR DTC114ES
Q501	8-729-900-74	TRANSISTOR DTC143TS
Q502	8-729-900-74	TRANSISTOR DTC143TS
Q551	8-729-900-80	TRANSISTOR DTC114ES
Q552	8-729-900-61	TRANSISTOR DTA114ES
Q553	8-729-245-82	TRANSISTOR 2SC2458-Y
Q601	8-729-900-74	TRANSISTOR DTC143TS
Q602	8-729-900-74	TRANSISTOR DTC143TS
Q901	8-729-904-27	TRANSISTOR 2SD1761-E
Q902	8-729-920-91	TRANSISTOR 2SB1187-F
Q903	8-729-900-80	TRANSISTOR DTC114ES
R001	1-247-891-00	CARBON 330K 5% 1/4W
R002	1-249-411-11	CARBON 330 5% 1/4W
R003	1-249-401-11	CARBON 47 5% 1/4W
R004	1-249-429-11	CARBON 10K 5% 1/4W
R005	1-249-429-11	CARBON 10K 5% 1/4W
R006	1-249-429-11	(414L)...CARBON 10K 5% 1/4W
R007	1-249-441-11	CARBON 100K 5% 1/4W
R008	1-249-437-11	CARBON 47K 5% 1/4W
R009	1-247-903-00	CARBON 1M 5% 1/4W
R010	1-249-411-11	CARBON 330 5% 1/4W
R017	1-249-429-11	(414L)...CARBON 10K 5% 1/4W
R018	1-249-429-11	(414L)...CARBON 10K 5% 1/4W
R022	1-249-417-11	(414L)...CARBON 1K 5% 1/4W
R023	1-249-417-11	(414L)...CARBON 1K 5% 1/4W
R024	1-249-409-11	CARBON 220 5% 1/4W

Ref.No.	Part No.	Description
R025	1-249-429-11	CARBON 10K 5% 1/4W
R026	1-249-429-11	CARBON 10K 5% 1/4W
R027	1-249-429-11	(414L)...CARBON 10K 5% 1/4W
R028	1-249-429-11	(414L)...CARBON 10K 5% 1/4W
R031	1-247-891-00	(414:WG,IT)...CARBON 330K 1/4W
R032	1-249-411-11	(414:WG,IT)...CARBON 330K 1/4W
R101	1-249-417-11	CARBON 1K 5% 1/4W
R102	1-249-432-11	CARBON 18K 5% 1/4W
R103	1-249-435-11	CARBON 33K 5% 1/4W
R104	1-249-427-11	CARBON 6.8K 5% 1/4W
R105	1-249-430-11	CARBON 12K 5% 1/4W
R106	1-247-848-11	CARBON 5.1K 5% 1/4W
R107	1-249-416-11	(414:AEP/414L) ...CARBON 820 5% 1/4W
R107	1-249-420-11	(414:WG,IT) ...CARBON 1.8K 5% 1/4W
R108	1-249-437-11	CARBON 47K 5% 1/4W
R109	1-249-425-11	CARBON 4.7K 5% 1/4W
R110	1-249-425-11	CARBON 4.7K 5% 1/4W
R111	1-249-423-11	CARBON 3.3K 5% 1/4W
R112	1-249-423-11	CARBON 3.3K 5% 1/4W
R113	1-249-441-11	CARBON 100K 5% 1/4W
R114	1-249-429-11	CARBON 10K 5% 1/4W
R115	1-249-422-11	CARBON 2.7K 5% 1/4W
R116	1-249-422-11	CARBON 2.7K 5% 1/4W
R119	1-249-405-11	CARBON 100 5% 1/4W
R121	1-249-401-11	CARBON 47 5% 1/4W
R122	1-249-414-11	CARBON 560 5% 1/4W
R123	1-249-421-11	CARBON 2.2K 5% 1/4W
R124	1-249-423-11	CARBON 3.3K 5% 1/4W
R125	1-249-418-11	CARBON 1.2K 5% 1/4W
R126	1-249-410-11	CARBON 270 5% 1/4W
R127	1-249-425-11	CARBON 4.7K 5% 1/4W
R128	1-249-425-11	CARBON 4.7K 5% 1/4W
R129	1-249-425-11	CARBON 4.7K 5% 1/4W
R130	1-249-405-11	CARBON 100 5% 1/4W
R131	1-249-417-11	CARBON 1K 5% 1/4W
R132	1-249-418-11	CARBON 1.2K 5% 1/4W
R133	1-249-410-11	CARBON 270 5% 1/4W
R134	1-249-414-11	CARBON 560 5% 1/4W
R135	1-249-421-11	CARBON 2.2K 5% 1/4W
R136	1-249-433-11	CARBON 22K 5% 1/4W
R137	1-249-425-11	CARBON 4.7K 5% 1/4W
R138	1-249-425-11	CARBON 4.7K 5% 1/4W
R201	1-249-421-11	CARBON 2.2K 5% 1/4W
R202	1-249-421-11	CARBON 2.2K 5% 1/4W
R203	1-249-435-11	CARBON 33K 5% 1/4W
R204	1-249-441-11	CARBON 100K 5% 1/4W
R205	1-249-431-11	CARBON 15K 5% 1/4W
R207	1-249-423-11	CARBON 3.3K 5% 1/4W
R210	1-249-417-11	CARBON 1K 5% 1/4W
R211	1-249-405-11	CARBON 100 5% 1/4W
R301	1-249-437-11	CARBON 47K 5% 1/4W
R302	1-249-422-11	CARBON 2.7K 5% 1/4W
R303	1-249-417-11	CARBON 1K 5% 1/4W
R304	1-249-437-11	CARBON 47K 5% 1/4W
R305	1-249-431-11	CARBON 15K 5% 1/4W
R306	1-247-897-11	CARBON 560K 5% 1/4W

Ref.No.	Part No.	Description				
R307	1-249-437-11	CARBON	47K	5%	1/4W	
R308	1-249-441-11	CARBON	100K	5%	1/4W	
R309	1-249-433-11	CARBON	22K	5%	1/4W	
R310	1-249-427-11	CARBON	6.8K	5%	1/4W	
R311	1-249-441-11	CARBON	100K	5%	1/4W	
R312	1-249-430-11	CARBON	12K	5%	1/4W	
R313	1-247-870-11	CARBON	43K	5%	1/4W	
R314	1-249-425-11	CARBON	4.7K	5%	1/4W	
R315	1-249-441-11	CARBON	100K	5%	1/4W	
R316	1-249-441-11	CARBON	100K	5%	1/4W	
R317	1-249-417-11	CARBON	1K	5%	1/4W	
R318	1-249-417-11	CARBON	1K	5%	1/4W	
R319	1-249-409-11	CARBON	220	5%	1/4W	
R320	1-249-409-11	CARBON	220	5%	1/4W	
R321	1-247-903-00	CARBON	1M	5%	1/4W	
R322	1-249-411-11	CARBON	330	5%	1/4W	
R323	1-247-882-11	CARBON	130K	5%	1/4W	
R324	1-249-426-11	CARBON	5.6K	5%	1/4W	
R325	1-249-433-11	CARBON	22K	5%	1/4W	
R326	1-249-433-11	CARBON	22K	5%	1/4W	
R327	1-249-431-11	CARBON	15K	5%	1/4W	
R328	1-249-411-11	CARBON	330	5%	1/4W	
R329	1-249-425-11	CARBON	4.7K	5%	1/4W	
R330	1-249-429-11	CARBON	10K	5%	1/4W	
R331	1-247-903-00	CARBON	1M	5%	1/4W	
R332	1-249-411-11	CARBON	330	5%	1/4W	
R333	1-247-882-11	CARBON	130K	5%	1/4W	
R334	1-249-426-11	CARBON	5.6K	5%	1/4W	
R335	1-249-429-11	CARBON	10K	5%	1/4W	
R336	1-249-431-11	CARBON	15K	5%	1/4W	
R338	1-249-411-11	CARBON	330	5%	1/4W	
R339	1-249-425-11	CARBON	4.7K	5%	1/4W	
R340	1-249-429-11	CARBON	10K	5%	1/4W	
R341	1-249-437-11	CARBON	47K	5%	1/4W	
R342	1-249-429-11	CARBON	10K	5%	1/4W	
R343	1-249-433-11	CARBON	22K	5%	1/4W	
R344	1-249-427-11	CARBON	6.8K	5%	1/4W	
R345	1-249-435-11	CARBON	33K	5%	1/4W	
R347	1-247-870-11	CARBON	43K	5%	1/4W	
R348	1-249-441-11	CARBON	100K	5%	1/4W	
R349	1-249-429-11	CARBON	10K	5%	1/4W	
R350	1-249-435-11	CARBON	33K	5%	1/4W	
R351	1-249-419-11	CARBON	1.5K	5%	1/4W	
R352	1-249-427-11	CARBON	6.8K	5%	1/4W	
R353	1-249-416-11	CARBON	820	5%	1/4W	
R354	1-249-423-11	CARBON	3.3K	5%	1/4W	
R355	1-249-435-11	CARBON	33K	5%	1/4W	
R356	1-249-435-11	CARBON	33K	5%	1/4W	
R357	1-249-441-11	CARBON	100K	5%	1/4W	
R358	1-249-430-11	CARBON	12K	5%	1/4W	
R361	1-249-425-11	CARBON	4.7K	5%	1/4W	
R362	1-249-438-11	CARBON	56K	5%	1/4W	
R363	1-249-433-11	CARBON	22K	5%	1/4W	
R364	1-249-437-11	CARBON	47K	5%	1/4W	
R365	1-249-427-11	CARBON	6.8K	5%	1/4W	
R366	1-249-437-11	CARBON	47K	5%	1/4W	
R367	1-249-388-11	CARBON	3.9	5%	1/4W	

Ref.No.	Part No.	Description				
R371	1-249-429-11	CARBON	10K	5%	1/4W	
R372	1-249-417-11	CARBON	1K	5%	1/4W	
R373	1-249-418-11	CARBON	1.2K	5%	1/4W	
R374	1-249-440-11	CARBON	82K	5%	1/4W	
R375	1-249-441-11	CARBON	100K	5%	1/4W	
R376	1-247-864-11	CARBON	24K	5%	1/4W	
R377	1-247-864-11	CARBON	24K	5%	1/4W	
R381	1-249-429-11	CARBON	10K	5%	1/4W	
R382	1-249-421-11	CARBON	2.2K	5%	1/4W	
R383	1-249-423-11	CARBON	3.3K	5%	1/4W	
R384	1-249-421-11	CARBON	2.2K	5%	1/4W	
R385	1-249-429-11	CARBON	10K	5%	1/4W	
R386	1-249-441-11	CARBON	100K	5%	1/4W	
R387	1-249-429-11	CARBON	10K	5%	1/4W	
R388	1-249-423-11	CARBON	3.3K	5%	1/4W	
R389 ⚠	1-213-044-61	FUSIBLE	2.2	5%	1W	F
R401	1-249-437-11	CARBON	47K	5%	1/4W	
R402	1-249-422-11	CARBON	2.7K	5%	1/4W	
R403	1-249-417-11	CARBON	1K	5%	1/4W	
R404	1-249-437-11	CARBON	47K	5%	1/4W	
R405	1-249-431-11	CARBON	15K	5%	1/4W	
R406	1-247-897-11	CARBON	560K	5%	1/4W	
R407	1-249-437-11	CARBON	47K	5%	1/4W	
R408	1-249-441-11	CARBON	100K	5%	1/4W	
R409	1-249-433-11	CARBON	22K	5%	1/4W	
R410	1-249-427-11	CARBON	6.8K	5%	1/4W	
R411	1-249-441-11	CARBON	100K	5%	1/4W	
R412	1-249-430-11	CARBON	12K	5%	1/4W	
R413	1-247-870-11	CARBON	43K	5%	1/4W	
R414	1-249-425-11	CARBON	4.7K	5%	1/4W	
R421	1-247-903-00	CARBON	1M	5%	1/4W	
R422	1-249-411-11	CARBON	330	5%	1/4W	
R423	1-247-882-11	CARBON	130K	5%	1/4W	
R424	1-249-426-11	CARBON	5.6K	5%	1/4W	
R425	1-249-433-11	CARBON	22K	5%	1/4W	
R426	1-249-433-11	CARBON	22K	5%	1/4W	
R427	1-249-431-11	CARBON	15K	5%	1/4W	
R431	1-247-903-00	CARBON	1M	5%	1/4W	
R432	1-249-411-11	CARBON	330	5%	1/4W	
R433	1-247-882-11	CARBON	130K	5%	1/4W	
R434	1-249-426-11	CARBON	5.6K	5%	1/4W	
R435	1-249-429-11	CARBON	10K	5%	1/4W	
R436	1-249-431-11	CARBON	15K	5%	1/4W	
R441	1-249-437-11	CARBON	47K	5%	1/4W	
R442	1-249-429-11	CARBON	10K	5%	1/4W	
R443	1-249-433-11	CARBON	22K	5%	1/4W	
R444	1-249-427-11	CARBON	6.8K	5%	1/4W	
R445	1-249-435-11	CARBON	33K	5%	1/4W	
R447	1-249-417-11	CARBON	1K	5%	1/4W	
R448	1-249-429-11	CARBON	10K	5%	1/4W	
R449	1-249-409-11	CARBON	220	5%	1/4W	
R450	1-249-435-11	CARBON	33K	5%	1/4W	
R451	1-249-419-11	CARBON	1.5K	5%	1/4W	
R452	1-249-427-11	CARBON	6.8K	5%	1/4W	
R453	1-249-416-11	CARBON	820	5%	1/4W	
R454	1-249-423-11	CARBON	3.3K	5%	1/4W	
R455	1-249-435-11	CARBON	33K	5%	1/4W	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			
R456	1-249-435-11	CARBON	33K	5%	1/4W
R457	1-249-441-11	CARBON	100K	5%	1/4W
R458	1-249-430-11	CARBON	12K	5%	1/4W
R501	1-249-413-11	CARBON	470	5%	1/4W
R502	1-249-425-11	CARBON	4.7K	5%	1/4W
R503	1-249-434-11	CARBON	27K	5%	1/4W
R504	1-247-903-00	CARBON	1M	5%	1/4W
R505	1-249-419-11	CARBON	1.5K	5%	1/4W
R506	1-247-903-00	CARBON	1M	5%	1/4W
R507	1-249-425-11	CARBON	4.7K	5%	1/4W
R508	1-249-405-11	CARBON	100	5%	1/4W
R509	1-249-405-11	CARBON	100	5%	1/4W
R551	1-249-441-11	CARBON	100K	5%	1/4W
R552	1-247-903-00	CARBON	1M	5%	1/4W
R554	1-249-423-11	CARBON	3.3K	5%	1/4W
R555	1-249-417-11	CARBON	1K	5%	1/4W
R556	1-249-413-11	CARBON	470	5%	1/4W
R557	1-249-420-11	CARBON	1.8K	5%	1/4W
R558	1-249-419-11	CARBON	1.5K	5%	1/4W
R559	1-249-421-11	CARBON	2.2K	5%	1/4W
R560	1-249-425-11	CARBON	4.7K	5%	1/4W
R561	1-249-410-11	CARBON	270	5%	1/4W
R562	1-249-429-11	CARBON	10K	5%	1/4W
R563	1-249-429-11	CARBON	10K	5%	1/4W
R564	1-249-425-11	CARBON	4.7K	5%	1/4W
R565	1-249-441-11	CARBON	100K	5%	1/4W
R566	1-249-407-11	CARBON	150	5%	1/4W
R567	1-249-407-11	CARBON	150	5%	1/4W
R568	1-249-429-11	CARBON	10K	5%	1/4W
R569	1-249-413-11	CARBON	470	5%	1/4W
R570	1-249-417-11	CARBON	1K	5%	1/4W
R571	1-249-417-11	CARBON	1K	5%	1/4W
R581	1-249-405-11	CARBON	100	5%	1/4W
R582	1-249-417-11	CARBON	1K	5%	1/4W
R583	1-249-429-11	CARBON	10K	5%	1/4W
R601	1-249-413-11	CARBON	470	5%	1/4W
R602	1-249-425-11	CARBON	4.7K	5%	1/4W
R603	1-249-434-11	CARBON	27K	5%	1/4W
R604	1-247-903-00	CARBON	1M	5%	1/4W
R605	1-249-419-11	CARBON	1.5K	5%	1/4W
R606	1-247-903-00	CARBON	1M	5%	1/4W
R607	1-249-425-11	CARBON	4.7K	5%	1/4W
R701	1-249-417-11	CARBON	1K	5%	1/4W
R702	1-249-438-11	CARBON	56K	5%	1/4W
R703	1-249-413-11	CARBON	470	5%	1/4W

Ref.No.	Part No.	Description				
R704	1-249-438-11	CARBON	56K	5%	1/4W	
R705	1-249-482-11	CARBON	4.7	5%	1/2W	
R706	1-247-756-11	CARBON	2.2K	5%	1/2W	
R707	1-247-756-11	CARBON	2.2K	5%	1/2W	
R708	1-249-414-11	CARBON	560	5%	1/4W	
R709	1-249-429-11	CARBON	10K	5%	1/4W	
R751 ⚠	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R752 ⚠	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R753	1-247-752-11	CARBON	1K	5%	1/2W	
R754	1-247-752-11	CARBON	1K	5%	1/2W	
R755	1-249-417-11	CARBON	1K	5%	1/4W	
R756	1-249-441-11	CARBON	100K	5%	1/4W	
R757	1-247-903-00	CARBON	1M	5%	1/4W	
R758	1-249-429-11	CARBON	10K	5%	1/4W	
R759	1-249-437-11	CARBON	47K	5%	1/4W	
R760	1-247-883-00	CARBON	150K	5%	1/4W	
R761	1-249-429-11	CARBON	10K	5%	1/4W	
R771 ⚠	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R791	1-247-079-00	(414:WG)...CARBON	4.7		1/4W	
R801	1-249-417-11	CARBON	1K	5%	1/4W	
R802	1-249-438-11	CARBON	56K	5%	1/4W	
R803	1-249-413-11	CARBON	470	5%	1/4W	
R804	1-249-438-11	CARBON	56K	5%	1/4W	
R805	1-249-482-11	CARBON	4.7	5%	1/2W	
R806	1-247-756-11	CARBON	2.2K	5%	1/2W	
R807	1-247-756-11	CARBON	2.2K	5%	1/2W	
R808	1-249-414-11	CARBON	560	5%	1/4W	
R809	1-249-429-11	CARBON	10K	5%	1/4W	
R891	1-247-077-00	(414:WG)...CARBON	4.7		1/4W	
R901 ⚠	1-217-473-00	FUSIBLE	2.2	5%	1W	F
R902 ⚠	1-213-068-61	FUSIBLE	22	5%	1W	F
R903	1-247-903-00	CARBON	1M	5%	1/4W	
R904	1-249-432-11	CARBON	18K	5%	1/4W	
R905	1-249-423-11	CARBON	3.3K	5%	1/4W	
R906	1-249-431-11	CARBON	15K	5%	1/4W	
R907	1-249-431-11	CARBON	15K	5%	1/4W	
R909 ⚠	1-213-088-61	FUSIBLE	150	5%	1W	F
R910	1-249-413-11	CARBON	470	5%	1/4W	
RV101	1-228-994-00	RES, ADJ, CARBON 10K (FM TUNED)				
RV102	1-228-994-00	RES, ADJ, CARBON 10K (AM TUNED)				
RV321	1-238-009-11	RES, ADJ, CARBON 220 DECK A (PB LEVEL L)				
RV331	1-238-009-11	RES, ADJ, CARBON 220 DECK B (PB LEVEL R)				
RV341	1-238-017-11	RES, ADJ, CARBON 22K (REC LEVEL L)				
RV361	1-238-019-11	RES, ADJ, CARBON 47K (REC BIAS L)				

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description
RV421	1-238-009-11	RES, ADJ, CARBON 220 DECK A (PB LEVEL R)
RV431	1-238-009-11	RES, ADJ, CARBON 220 DECK B (PB LEVEL R)
RV441	1-238-017-11	RES, ADJ, CARBON 22K (REC LEVEL R)
RV461	1-238-019-11	RES, ADJ, CARBON 47K (REC BIAS R)
RV501	1-238-451-21	RES, VAR, SLIDE 250K (100Hz)
RV502	1-238-451-21	RES, VAR, SLIDE 250K (400Hz)
RV503	1-238-451-21	RES, VAR, SLIDE 250K (1kHz)
RV504	1-238-451-21	RES, VAR, SLIDE 250K (4kHz)
RV505	1-238-451-21	RES, VAR, SLIDE 250K (12kHz)
RV551	1-238-101-21	RES, VAR, SLIDE 100K (BALANCE)
RV552	1-238-539-11	RES, VAR, CARBON 50K/50K (VOLUME)
RV601	1-238-451-21	RES, VAR, SLIDE 250K (100Hz)
RV602	1-238-451-21	RES, VAR, SLIDE 250K (400Hz)
RV603	1-238-451-21	RES, VAR, SLIDE 250K (1kHz)
RV604	1-238-451-21	RES, VAR, SLIDE 250K (4kHz)
RV605	1-238-451-21	RES, VAR, SLIDE 250K (12kHz)
RY301	1-515-614-21	RELAY (REC/PB)
S200	1-554-596-21	SWITCH, KEY BOARD (0)
S201	1-554-596-21	SWITCH, KEY BOARD (1)
S202	1-554-596-21	SWITCH, KEY BOARD (2)
S203	1-554-596-21	SWITCH, KEY BOARD (3)
S204	1-554-596-21	SWITCH, KEY BOARD (4)
S205	1-554-596-21	SWITCH, KEY BOARD (5)
S206	1-554-596-21	SWITCH, KEY BOARD (6)
S207	1-554-596-21	SWITCH, KEY BOARD (7)
S208	1-554-596-21	SWITCH, KEY BOARD (8)
S209	1-554-596-21	SWITCH, KEY BOARD (9)
S210	1-554-596-21	SWITCH, KEY BOARD (MEMORY)
S211	1-554-596-21	SWITCH, KEY BOARD (ENTER)
S212	1-554-596-21	SWITCH, KEY BOARD (TUNING +)
S213	1-554-596-21	SWITCH, KEY BOARD (TUNING -)
S214	1-554-596-21	SWITCH, KEY BOARD (BAND)
S341	1-554-419-00	SWITCH, PUSH (1 KEY)(DOLBY NR)
S361	1-554-798-31	SWITCH, SLIDE (ISS)
S501	1-571-436-11	SWITCH, KEYBOARD (POWER)
S502	1-571-436-11	SWITCH, KEYBOARD (SAT)
S503	1-554-596-21	SWITCH, KEY BOARD (TAPE)
S504	1-554-596-21	SWITCH, KEY BOARD (CD)
S505	1-554-596-21	SWITCH, KEY BOARD (TUNER)
S506	1-554-596-21	SWITCH, KEY BOARD (PHONO)
S901 ⚠	1-571-722-11	(414L)...SWITCH, VOLTAGE SELECTION

Ref.No.	Part No.	Description
T361	1-433-347-11	TRANSFORMER, BIAS OSCILLATION
T901 ⚠	1-449-544-11	(414L)...TRANSFORMER, POWER
T901 ⚠	1-449-618-11	(414)....TRANSFORMER, POWER
TB001	1-536-707-00	(414:WG,IT).....TERMINAL BOARD, PUSH 2P (ANTENNA)
TB001	1-536-708-00	(414:AEP/414L)...TERMINAL BOARD, PUSH 4P (ANTENNA)
TB002	1-563-199-21	(414:WG,IT)...CONNECTOR PAL
TB101	*4-925-530-01	PLATE, GROUND
TB701	1-536-705-00	TERMINAL BOARD (SP)
TP101	*1-560-060-00	PIN, CONNECTOR 2P (NULL)
TP302	*1-560-061-00	PIN, CONNECTOR 3P
X101	1-577-075-11	OSCILLATOR, CERAMIC (456kHz)
X201	1-577-191-11	VIBRATOR, CRYSTAL (7.2MHz)
X551	1-577-082-11	VIBRATOR, CERAMIC (4MHz)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

FH-411R

SERVICE MANUAL

AEP Model
E Model
Australian Model

● FH-411R is composed of following models. As for the service manual it is issued for each component model, then plese refer to it.

COMPONENT MODEL NAME FOR FH-411R

TUNER, DECK, AMPLIFIER	HST-H411
SPEAKER	SS-H311

SPECIFICATIONS

Power requirements AEP, G, IT, EE model :
220V AC, 50/60Hz
E, EA, AUS model :
110−120V or 220−240V AC
adjustable 50/60Hz

Power consumption 65watts

Dimensions Approx. 595×270×250mm (w/h/d)
(23½×10¾×10 inches)
incl. projecting parts and controls.

Weight Approx. 9.5kg (20 lb 15 oz) net

Supplied accessories RM-S190 Remote commander (1)
SONY SUM-3 (NS) batteries (2)
AM loop antenna (1)

Design and specifications subject to change without notice.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

PARTS LIST

NOTE:

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

G : Germany model
IT : Italian model
EA : Saudi Arabia model
EE : East European model
AUS : Australian model

ACCESSORY & PACKING MATERIAL

1-465-249-11 REMOTE COMMANDER(RM-S190)
2-181-754-01 COVER, BATTERY(for RM-S190)

1-501-349-11 ANTENNA, LOOP
⚠1-569-007-11 (E).....ADAPTOR,CONVERSION 2P
⚠1-569-008-11 (AUS,EA).....ADAPTOR,CONVERSION 2P

3-752-778-11 (AEP,E,EA,AUS).....MANUAL INSTRUCTION
(English,French,Spanish,Chinese)
3-752-778-41 (AEP,G,IT).....MANUAL INSTRUCTION
(German,Dutch,Swedish,Italian,Portuguese)
3-752-778-51 (EE).....MANUAL INSTRUCTION
(English,German,Polish,Russian)

*4-942-341-01 (E,EA).....INDIVIDUAL CARTON
*4-942-344-01 (AEP,G,IT,EE,AUS)...INDIVIDUAL CARTON
*4-942-340-01 CUSHION(HST)
*4-857-137-01 CUSHION(SPEAKER)

COMPACT HI-DENSITY COMPONENT SYSTEM

SONY®

MICROFILM

9-956-201-11

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Audio Group

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